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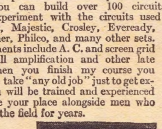

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AMAZING STORIES

Scientific Fiction

Vol. 6 July, 1931 No. 4

In Our Next Issue

SUBMICROSCOPIC, by Capt. S. P. Meek, U.S.A. If by some means, scientific, of course, one could transport himself to another atom—or world—what would he be likely to find? If Einstein is right that all things are relative, then size is, too. In other words, if we should be reduced in size, and the world we go into, should be proportionately smaller, then we would not feel or see the difference in size. Capt. Meek, in this story, touches on a somewhat new field for him and he gets an exceedingly happy result—as you will agree, after you have read this story.

THE TIME HOAXERS, by Paul Bolton. Here is something different—an unusual time-story, treated in a unique manner. Every generation leaves its documentary records—some in the form of hieroglyphics carved in stone; some in the form of pictures, etc. And perhaps in the future, newspapers will be just as much an oddity. Our new author has ingeniously woven his theme into a thoroughly novel sketch. We are glad to welcome Mr. Bolton to our group of authors.

SPACEHOUNDS OF IPC, by Edward E. Smith, Ph.D. (A Serial in three parts) Part II. Almost anything that can be said about this story will be superfluous to those who have read the first instalment. There seems no limit to the doctor's ability to do better and better. These chapters are fast-moving, thrilling and full of science.

THE SUPERMAN, by A. H. Johnson. Because we felt sure that "The Raid of the Mercury" would be hailed as a gem, we are giving the sequel to the story before too much time elapses. Because this story is much longer, the author avails himself, creditably, of the opportunity to elaborate on some very startling scientific ideas.

THE FORGOTTEN WORLD, by E. Bauer. Crowded out of the last issue.

And other unusual scientific fiction.

In Our July Issue

Spacehounds of IPC
(A Serial in three parts) Part I
By Edward E. Smith, Ph.D. 294
Illustrated by Wesso

What Do You Know?
(Science Questionnaire) 319

Cleon of Yzdral
By P. Schuyler Miller 320
Illustrated by Paul

The Jameson Satellite
By Neil R. Jones 334
Illustrated by Morey

The Metal Monster
By Otis Adelbert Kline 344
Illustrated by Morey

The Raid of the Mercury
By A. H. Johnson 364
Illustrated by Morey

The Night Express (A Poem)
By Julia Boynton Green 371

The Stolen Chrysalis
By J. Rogers Ullrich 372
Illustrated by Paul

In the Realm of Books 379

Discussions 379

Our Cover

this issue depicts a scene from the story entitled, "The Metal Monster," by Otis Adelbert Kline, in which is seen the powerful electroplane, sent out for research purposes, just as it escapes from the inimical beings below the crater. The immense metal sphere shoots directly up from the crater and follows in hot pursuit.

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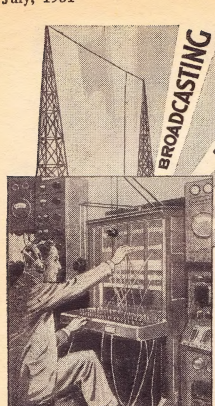

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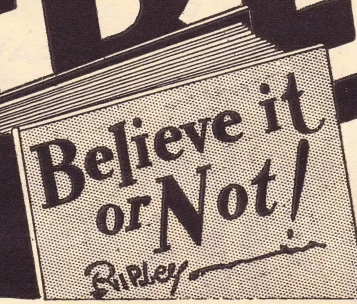

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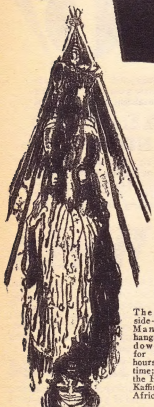

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VOLUME 6

AMAZING STORIES

THE MAGAZINE OF SCIENTIFICTION

JULY, 1931 No. 4

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Editorial and General Offices: 381 Fourth Avenue, New York, N. Y.

Extravagant Fiction Today - - - - - - - - - - Cold Fact Tomorrow

Waves and Rays

By T. O'Conor Sloane, Ph.D.

THE subject of rays has been a great attraction for speculative dreamers, who picture to themselves what rays may eventually be made to do. Rays are invoked as acting upon distant objects. Some years ago we were told of rays which, directed upon an automobile, would bring it to rest, interfering with and nullifying the action of the electric ignition system. A ray that could do this would have a wonderful effect in war. An airplane's engine could be stopped and the aviator would have to concern himself with getting to a landing. If two fighting planes used the ray on each other, both would go down and be out of the fighting.

In the World War there were two achievements impressive by their originality and effectiveness. They also hold out a possibility of immense development. One was the long range "Paris" gun, as it is sometimes called. This dropped shells of about eight inches caliber into the city of Paris, some 75 miles distant. The shells reached an approximate vacuum as they rose, and their ballistic curve on this account must have approximated the parabola. The projectiles did comparatively little harm. The effect was to frighten the enemy. The anticipation of the shells exploding in the heart of the city was appalling. The worst injury to life was when, by an irony of fate, one of them broke down the roof of a crowded church and killed a number of non-combatants.

Suppose a ray could have been developed to interfere with the infinitesimal action of the firing system of a gun—for every shot solved a problem in higher mathematics—it would have seemed like a nullification of the greatest efforts of the artillerists. The ray might have been produced in a distant airplane. But no such ray has been discovered.

The tank is destined to play an increasing part in future wars. It is being developed into a moving fortress. If the ray, which can arrest the motion of a gas engine, were a true story, it could do much to nullify the use of the tank, for the latter must be mobile. Without mobility it is reduced to uselessness or near to it. When the account of the ray we speak of first appeared in the papers, many believed the story, as it was told, to the effect that automobiles were brought to rest from a distance by the new emanation. The description read like a romance.

The above is merely imaginary, and is written to bring out the fact that there are undreamed of possibilities of developments in rays, and that it is not safe to limit these possibilities.

But there is more to be said than this. In all the physical world, nothing is more essential to the life of man than rays. Without rays the universe would cease to exist, for mankind and all life would vanish. This is a trite assertion, for we all know that we depend upon the sun for the heat necessary to existence and for light and that heat and light reach us by rays. Exactly what rays are is none too certain. They are generally taken as ether waves. Having given us the heat from the sun so that we can live, rays give us light from the same luminary so that we can see. But they do much more than this, for the light rays of the sun have much to do with our health and life.

Wireless communication is one of the wonders of the age, and it is carried out by waves of ether comparatively long, constituting rays. These waves are so long that they carry neither heat nor light, but they are the vehicles or pathway, as it may be termed, for all sorts of impressed waves and these impressed upon them at the sending station, give the sounds we listen to from our radios, with far too little amazement.

Rays tend to spread over the spherical elements, of which their point of origin is the center. This spreading weakens their power and forms one of the limitations to long-distance radio work. Long ether waves are very intractable, and are hard to reflect and refract, if we compare these qualities or factors to the corresponding ones of light.

As we approach the region of the spectrum, the rays become shorter and more tractable. They can be reflected and refracted and give us heat and light. In the ultra-violet region of shorter waves the actinic effects appear, and these rays are used as remedial agents. They produce sun-burn. The still shorter X-rays produce another more intense and permanent burn and if enough exposure is submitted to, they can slowly maim and kill. They can pass through many substances. Lead is one of the best shields.

The Millikan, or cosmic ray, is far more penetrative than the X-ray, and it is everywhere; several feet thickness of lead is needed to shield it off. Its waves are very short. And now a cheerful theory has been advanced to the effect that cosmic rays act to kill us, and that the cosmic rays may operate to shorten our lives, to eventually prove fatal to every man. This curious theory would make us immortal or nearly so, if the cosmic rays could be cut off.

It is a strange thought and an interesting one, that, except for the cosmic ray, we might live for years of many generations.

Beginning a Thrilling New Serial of Interplanetary Life and Travel by Edward E. Smith, Ph.D.

Author of "Skylark of Space," and "Skylark Three"

PART I

Spacehounds of IPC

A GOOD many of us, who are now certain beyond a doubt that space travel will forever remain in the realm of the impossible, probably would, if a rocket that were shot to the moon, for instance, did arrive, and perhaps return to give proof of its safe arrival on our satellite, accept the phenomenon in a perfectly blasé, twentieth century manner. Dr. Smith, that phenomenal writer of classic scientific fiction, seems to have become so thoroughly convinced of the advent of interplanetary travel that it is difficult for the reader to feel, after finishing "Spacehounds of IPC," that travel in the great spaces is not already an established fact. Dr. Smith, as a professional chemist, is kept fairly busy. As a writer, he is satisfied with nothing less than perfection. For that reason, a masterpiece from his pen has become almost an annual event. We know you will like "Spacehounds" even better than the "Skylark" series.

Illustrated by WESSO

CHAPTER I

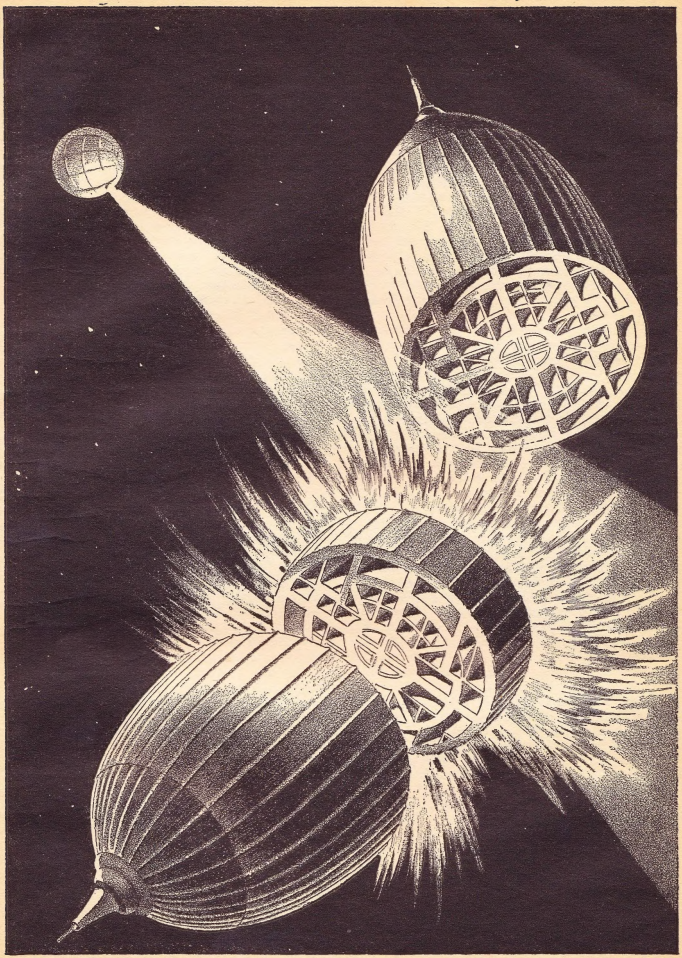
The IPV *Arcturus* Sets Out for Mars

A NARROW football of steel, the Interplanetary Vessel *Arcturus* stood upright in her berth in the dock like an egg in its cup. A hundred feet across and a hundred and seventy feet deep was that gigantic bowl, its walls supported by the structural steel and concrete of the dock and lined with hard-packed bumper-layers of hemp and fibre. High into the air extended the upper half of the ship of space—a sullen gray expanse of fifty-inch hardened steel armor, curving smoothly upward to a needle prow. Countless hundred of fine vertical scratches marred every inch of her surface, and here and there the stubborn metal was grooved and scored to a depth of inches—each scratch and score the record of an attempt of some wandering cosmic body to argue the right-of-way with the stupendous mass of that man-made cruiser of the void.

A burly young man made his way through the throng about the entrance, nodded unconcernedly to the gate-keeper, and joined the stream of passengers flowing through the triple doors of the double air-lock and down a corridor to the center of the vessel. However, instead of entering one of the elevators which were whisking the passengers up to their staterooms in the upper half of the enormous football, he in some way caused an opening to appear in an apparently blank steel wall and stepped through it into the control room.

"Hi, Breck!" the burly one called, as he strode up to the instrument-desk of the chief pilot and tossed his bag carelessly into a corner. "Behold your computer in the flesh! What's all this howl and fuss about poor computation?"

"Hello, Steve!" The chief pilot smiled as he shook hands cordially. "Glad to see you again—but don't try to kid the old man. I'm simple enough to believe almost anything, but some things just aren't being done. We have been yelling, and yelling hard, for trained computers ever since they started riding us about every one-



Stevens made out a relatively tiny ball of metal . . . at a distance of perhaps a mile. From this ball there shot a blinding plane of light, and the Arcturus *fell apart . . .*

centimeter change in acceleration, but I know that you're no more an I-P computer than I am a Digger Indian. They don't shoot sparrows with coast-defense guns!"

"Thanks for the compliment, Breck, but I'm your computer for this trip, anyway. Newton, the good old egg, knows what you fellows are up against and is going to do something about it, if he has to lick all the rest of the directors to do it. He knew that I was loose for a couple of weeks and asked me to come along this trip to see what I could see. I'm to check the observatory data—they don't know I'm aboard—take the peaks and valleys off your acceleration curve, if possible, and report to Newton just what I find out and what I think should be done about it. How early am I?" While the newcomer was talking, he had stripped the covers from a precise scale model of the solar system and from a large and complicated calculating machine and had set to work without a wasted motion or instant—scaling off upon the model the positions of the various check-stations and setting up long and involved integrals and equations upon the calculator.

The older man studied the broad back of the younger, bent over his computations, and a tender, almost fatherly smile came over his careworn face as he replied:

"Early? You? Just like you always were—plus fifteen seconds on the deadline. The final dope is due right now." He plugged the automatic recorder and speaker into a circuit marked "Observatory," waited until a tiny light above the plug flashed green, and spoke.

"IPV *Arcturus;* Breckenridge, Chief Pilot; trip number forty-three twenty-nine. Ready for final supplementary route and flight data, Tellus to Mars."

"Meteoric swarms still too numerous for safe travel along the scheduled route," came promptly from the speaker. "You must stay further away from the plane of the ecliptic. The ether will be clear for you along route E2-P6-W41-K3-R19-S7-M14. You will hold a constant acceleration of 981.27 centimeters between initial and final check stations. Your take-off will be practically unobstructed, but you will have to use the utmost caution in landing upon Mars, because in order to avoid a weightless detour and a loss of thirty-one minutes, you must pass very close to both the Martian satellites. To do so safely you must pass the last meteorological station, M14, on schedule time plus or minus five seconds, at scheduled velocity plus or minus ten meters, with exactly the given negative acceleration of 981.27 centimeters, and exactly upon the pilot ray M14 will have set for you."

"All x." Breckenridge studied his triplex chronometer intently, then unplugged and glanced around the control room, in various parts of which half a dozen assistants were loafing at their stations.

"Control and power check-out—Hipe!" he barked. "Driving converters and projectors!"

The first assistant scanned his meters narrowly as he swung a multi-point switch in a flashing arc. "Converter efficiency 100, projector reactivity 100; on each of numbers one to forty-five inclusive. All x."

"Dirigible projectors!"

TWO more gleaming switches leaped from point to point. "Converter efficiency 100, projector reactivity 100, dirigibility 100, on each of numbers one to thirty-two, inclusive, of upper band; and numbers one to thirty-two, inclusive, of lower band. All x."

"Gyroscopes!"

"35,000. Drivers in equilibrium at ten degrees plus. All x.'

"Upper lights and lookout plates!"

The second assistant was galvanized into activity, and upon a screen before him there appeared a view as though he were looking directly upward from the prow of the great vessel. The air above them was full of aircraft of all shapes and sizes, and occasionally the image of one of that flying horde flared into violet splendor upon the screen as it was caught in the mighty, roving beam of one of the twelve ultra-light projectors under test.

"Upper lights and lookout plates—all x," the second assistant reported, and other assistants came to attention as the check-out went on.

"Lower lights and lookout plates!"

"All x," was the report, after each of the twelve ultra-lights of the stern had swung around in its supporting brackets, illuminating every recess of the dark depths of the bottom well of the berth and throwing the picture upon another screen in lurid violet relief.

"Lateral and vertical detectors!"

"Laterals XP2710—all x. Verticals AJ4290—all x."

"Receptors!"

"15,270 kilofranks—all x."

"Accumulators!"

"700,000 kilofrank-hours—all x."

Having thus checked and tested every function of his department, Breckenridge plugged into "Captain," and when the green light went on:

"Chief pilot check-out—all x," he reported briefly.

"All x," acknowledged the speaker, and the chief pilot unplugged. Fifteen minutes remained, during which time one department head after another would report to the captain of the liner that everything in his charge was ready for the stupendous flight.

"All x, Steve?" Breckenridge turned to the computer. "How do you check acceleration and power with the observatory?"

"Not so good, old bean," the younger man frowned in thought. "They figure like astronomers, not navigators. They've made no allowances for anything, not even the reversal—and I figure four thousands for that and for minor detours. Then there's check station errors. . . ."

"Check-station errors! Why, they're always right—that's what they're for!"

"Don't fool yourself—they've got troubles of their own, the same as anybody else. In fact, from a study of the charts of the last few weeks, I'm pretty sure that E2 is at least four thousand kilometers this side of where he thinks he is, that W41 is ten or twelve thousand beyond his station, and that they've both got a lateral displacement that's simply fierce. I'm going to check up, and argue with them about it as we pass. Then there's another thing—they figure to only two places, and we've got to have the third place almost solid if we expect to get a smooth curve. A hundredth of a centimeter of acceleration means a lot on a long trip when they're holding us as close as they are doing now. We'll ride this trip on 981.286 centimeters—with our scheduled mass, that means thirty six points of four seven kilofranks *plus* equilibrium power. All set to go," the computer stated, as he changed, by fractions of arc, the course-plotters of the automatic integrating goniometer.

"You're the doctor—but I'm glad it's you that'll have to explain to the observatory," and Breckenridge set his exceedingly delicate excess power potentiometer exactly upon the indicated figure. "Well, we've got a few minutes left for a chin-chin before we lift her off."

"What's all this commotion about? Dish out the low-down."

"Well, it's like this, Steve. We pilots are having one sweet time—we're being growled at on every trip. The management squawks if we're thirty seconds plus or minus at the terminals, and the passenger department squalls if we change acceleration five centimeters total en route—claims it upsets the dainty customers and loses business for the road. They're tightening up on us all the time. A couple of years ago, you remember, it didn't make any difference what we did with the acceleration as long as we checked in somewhere near zero time—we used to spin 'em dizzy when we reversed at the half-way station—but that kind of stuff doesn't go any more. We've got to hold the acceleration constant and close to normal, got to hold our schedule on zero, *plus* or *minus* ten seconds, and yet we've got to make any detours they tell us to, such as this seven-million kilometer thing they handed us just now. To make things worse, we've got to take orders at every check-station, and yet *we* get the blame for everything that happens as a consequence of obeying those orders! Of course, I know as well as you do that it's rotten technique to change acceleration at every check-station; but we've told 'em over and over that we can't do any better until they put a real computer on every ship and tell the check-stations to report meteorites and other obstructions to us and then to let us alone. So you'd better recommend us some computers!"

"You're getting rotten computation, that's a sure thing, and I don't blame you pilots for yelling, but I don't believe that you've got the right answer. I can't help but think that the astronomers are lying down on the job. They are so sure that you pilots are to blame that it hasn't occurred to them to check up on themselves very carefully. However, we'll know pretty quick, and then we'll take steps.'

"I hope so—but say, Steve, I'm worried about using that much plus equilibrium power. Remember, we've got to hit M14 in absolutely good shape, or plenty heads will drop."

"I'll say they will. I know just how the passengers will howl if we hold them weightless for half an hour, waiting for those two moons to get out of the way, and I know just what the manager will do if we check in minus thirty-one minutes. Wow! He'll swell up and bust, sure. But don't worry, Breck—if we don't check in all right, anybody can have my head that wants it, and I'm taking full responsibility, you know."

"You're welcome to it." Breckenridge shrugged and turned the conversation into a lighter vein. "Speaking of weightlessness, it's funny how many weight-fiends there are in the world, isn't it? You'd think the passengers would enjoy a little weightlessness occasionally—especially the fat ones—but they don't. But say, while I think of it, how come you were here and loose to make this check-up? I thought you were out with the other two of the Big Three, solving all the mysteries of the Universe?"

"Had to stay in this last trip—been doing some work on the ether, force-field theory, and other advanced stuff that I had to go to Mars and Venus to get. Just got back last week. As for solving mysteries, laugh while you can, old hyena. You and a lot of other dim bulbs think that Roeser's Rays are the last word—that there's nothing left to discover—are going to get jarred loose from your hinges one of these days. When I came in nine months ago they were hot on the trail of something big, and I'll bet they bring it in. . . ."

Out upon the dock an insistent siren blared a crescendo and diminuendo blast of sound, and two minutes remained. In every stateroom and in every lounge and saloon speakers sounded a warning:

"For a short time, while we are pulling clear of the gravitational field of the Earth, walking will be somewhat difficult, as everything on board will apparently increase in weight by about one-fifth of its present amount. Please remain seated, or move about with caution. In about an hour weight will gradually return to normal. We start in one minute."

"Hipe!" barked the chief pilot as a flaring purple light sprang into being upon his board, and the assistants came to attention at their stations. "Seconds! Four! Three! Two! One! LIFT!" He touched a button and a set of plunger switches drove home, releasing into the forty-five enormous driving projectors the equilibrium power—the fifteen-thousand-and-odd kilofranks of energy that exactly counterbalanced the pull of gravity upon the mass of the cruiser. Simultaneously there was added from the potentiometer, already set to the exact figure given by the computer, the *plus*-equilibrium power—which would not be changed throughout the journey if the ideal acceleration curve were to be registered upon the recorders—and the immense mass of the cruiser of the void wafted vertically upward at a low and constant velocity. The bellowing, shrieking siren had cleared the air magically of the swarm of aircraft in her path, and quietly, calmly, majestically, the *Arcturus* floated upward.

BRECKENRIDGE, sixty seconds after the initial lift, actuated the system of magnetic relays which would gradually cut in the precisely measured "starting power," which it would be necessary to employ for sixty-nine minutes—for, without the acceleration given by this additional power, they would lose many precious hours of time in covering merely the few thousands of miles during which Earth's attraction would operate powerfully against their progress.

Faster and faster the great cruiser shot upward as more and more of the starting power was released, and heavier and heavier the passengers felt themselves become. Soon the full calculated power was on and the acceleration became constant. Weight no longer increased, but remained constant at a value of plus twenty three and six-tenths percent. For a few moments there had been uneasy stomachs among the passengers—perhaps a few of the first-trippers had been made ill—but it was not much worse than riding in a high-speed elevator, particularly since there was no change from positive to negative acceleration such as is experienced in express elevators.

The computer, his calculations complete, watched the pilot with interest, for, accustomed as he was to traversing the depths of space, there was a never-failing thrill to his scientific mind in the delicacy and precision of the work which Breckenridge was doing—work which could be done only by a man who had had long training in the profession and who was possessed of instantaneous ner-

vous reaction and of the highest degree of manual dexterity and control. Under his right and left hands were the double-series potentiometers actuating the variable-speed drives of the flight-angle directors in the hour and declination ranges; before his eyes was the finely marked micrometer screen upon which the guiding goniometer threw its needle-point of light; powerful optical systems of prisms and lenses revealed to his sight the director-angles, down to fractional seconds of arc. It was the task of the chief pilot to hold the screened image of the cross-hairs of the two directors in such position relative to the ever-moving point of light as to hold the mighty vessel precisely upon its course, in spite of the complex system of forces acting upon it.

For almost an hour Breckenridge sat motionless, his eyes flashing from micrometer screen to signal panel, his sensitive fingers moving the potentiometers through minute arcs because of what he saw upon the screen and in instantaneous response to the flashing, multicolored lights and tinkling signals of his board. Finally, far from earth, the moon's attraction and other perturbing forces comparatively slight, the signals no longer sounded and the point of light ceased its irregular motion, becoming almost stationary. The chief pilot brought both cross-hairs directly upon the brilliant point, which for some time they had been approaching more and more nearly, adjusted the photo-cells and amplifiers which would hold them immovably upon it, and at the calculated second of time, cut out the starting power by means of another set of automatically timed relays. When only the regular driving power was left, and the acceleration had been checked and found to be exactly the designated value of 981.286 centimeters, he stood up and heaved a profound sigh of relief.

"Well, Steve, that's over with—we're on our way. I'm always glad when this part of it is done."

"It's a ticklish job, no fooling—even for an expert," the mathematician agreed. "No wonder the astronomers think you birds are the ones who are gumming up their dope. Well, it's about time to plug in on E2. Here's where the fireworks start!" He closed the connections which transferred the central portion of the upper look-out screen to a small micrometer screen at Breckenridge's desk and plugged it into the first check-station. Instantly a point of red light, surrounded by a vivid orange circle, appeared upon the screen, low down and to the left of center, and the timing galvanometer showed a wide positive deflection.

"Hashed again!" growled Breckenridge. "I must be losing my grip, I guess. I put everything I had on that sight, and missed it ten divisions. I think I'll turn in my badge—I've cocked our perfect curve already, before we got to the first check-station!" His hands moved toward the controls, to correct their course and acceleration.

"As you were—hold everything! Lay off those controls!" snapped the computer. "There's something screwy, just as I thought—and it isn't you, either. I'm no pilot, of course, but I do know good compensation when I see it, and if you weren't compensating that point I never saw it done. Besides, with your skill and my figures I know darn well that we aren't off more than a tenth of one division. He's cuckoo! Don't call him—let him start it, and refer him to me."

"All x—I'll be only too glad to pass the buck. But I still think, Steve, that you're playing with dynamite. Who ever heard of an astronomer being wrong?"

"You'd be surprised," grinned the physicist, 'Since this fuss has just started, nobody has tried to find out whether they were wrong or not. . . ."

"IPV *Arcturus,* attention!" came from the speaker curtly.

"IPV *Arcturus,* Breckenridge," from the chief pilot. "You have been on my ray almost a minute. Why are you not correcting course and acceleration?"

"Doctor Stevens is computing us and has full control of course and acceleration," replied Breckenridge. "He will answer you."

"I am changing neither course nor acceleration because you are not in position," declared Stevens, crisply. "Please give me your present supposed location, and your latest precision goniometer bearings on the sun, the moon, Mars, Venus, and your tellurian reference limb, with exact time of observations, gyroscope zero-planes, and goniometer factors!"

"Correct at once or I shall report you to the Observatory," E2 answered loftily, paying no attention to the demand for proof of position.

"Be sure you do that, guy—and while you're at it report that your station hasn't taken a precision bearing in a month. Report that you've been muddling along on radio loop bearings, and that you don't know where you are, within seven thousand kilometers. And speaking of reporting—I know already that a lot of you astronomical guessers have only the faintest possible idea of where you really are, *plus, minus,* or lateral; and if you don't get yourselves straightened out before we get to W41, I'm going to make a report on my own account that will jar some of you birds loose from your upper teeth!" He unplugged with a vicious jerk, and turned to the pilot with a grin.

"Guess that'll hold him for a while, won't it?"

"He'll report us, sure," remonstrated Breckenridge. The older man was plainly ill at ease at this open defiance of the supposedly infallible check-stations.

"Not that baby," returned the computer confidently. "I'll bet you a small farm against a plugged nickel that right now he's working his goniometer so hard that its pivots are getting hot. He'll sneak back into position as soon as he can calculate his results, and pretend he's always been there."

"The others will be all right, then, probably, by the time we get to them?"

"Gosh, no—you're unusually dumb today, Breck. He won't tell anybody anything—he doesn't want to be the only goat, does he?"

"Oh, I see. How could you dope this out, with only the recorder charts?"

"Because I know the kind of stuff you pilots are—and those humps are altogether too big to be accounted for by anything I know about you. Another thing—the next station, P6, I think is keeping himself all x. If so, when you corrected for E2, which was wrong, it'd throw you all off on P6, which was right, and so on—a bad hump at almost every check-station. See?"

TRUE to prediction, the pilot ray of P6 came in almost upon the exact center of the micrometer screen, and Breckenridge smiled in relief as he began really to enjoy the trip.

"How do we check on chronometers?" asked P6 when Stevens had been introduced. "By my time you seem to be about two and a half seconds *plus?*"

"All x—two points four seconds plus—we're riding on 981,286 centimeters, to allow for the reversal and for minor detours. Bye."

"All this may have been coincidence, Breck, but we'll find out pretty quick now," the computer remarked when the flying vessel was nearing the third check-station. "Unless I'm all out of control we'll check in almost fourteen seconds minus on W41, and we may not even find him on the center block of the screen."

When he plugged in W41 was on the block, but was in the extreme upper right corner. They checked in thirteen and eight-tenths seconds minus on the station, and a fiery dialogue ensued when the computer questioned the accuracy of the location of the station and refused point-blank to correct his course.

"Well, Breck, old onion, that tears it," Stevens declared as he unplugged. "No use going any further on these bum reference points. I'm going to report to Newton—he'll rock the Observatory on its foundations!" He plugged into the telegraph room. "Have you got a free high-power wave? . . . Please put me on Newton, in the main office."

Moving lights flashed and flickered for an instant upon the communicator screen, settling down into a white glow which soon resolved itself into the likeness of a keen-eyed, gray-haired man, seated at his desk in the remote office of the Interplanetary Corporation. Newton smiled as he recognized the likeness of Stevens upon his own screen, and greeted him cordially.

"Have you started your investigation, Doctor Stevens?"

"Started it? I've finished it!" and Stevens tersely reported what he had learned, concluding: "So you see, you don't need special computers on these ships any more than a hen needs teeth. You've got all the computers you need, in the observatories—all you've got to do is make them work at their trade."

"The piloting was all x, then?"

"Absolutely—our curve so far is exactly flat ever since we cut off the starting power. Of course, all the pilots can't be as good as Breckenridge, but give them good computation and good check points and you shouldn't get any humps higher than about half a centimeter."

"They'll get both, from now on," the director assured him. "Thanks. If your work for the trip is done, you might show my little girl, Nadia, around the *Arcturus*. She's never been out before, and will be interested. Would you mind?"

"Glad to, Mr. Newton—I'll be a regular uncle to her."

"Thanks again, Operator, I'll speak to Captain King, please."

"Pipe down that guff, you unlicked cub, or I'll crown you with a proof-bar!" the chief pilot growled, as soon as Stevens had unplugged.

"You and who else?" retorted the computer, cheerfully. "Pipe down yourself, guy—if you weren't so darn dumb and didn't have such a complex, you'd know that you're the crack pilot of the outfit and wouldn't care who else knew it." Stevens carefully covered and put away the calculating machine and other apparatus he had been using and turned again to the pilot.

"I didn't know Newton had any kids, especially little ones, or I'd have got acquainted with them long ago. Of course I don't know him very well, since I never was around the office much, but the old tiger goes over big with me."

"Hm—m. Think you'll enjoy playing nursemaid all the rest of the trip?" Breckenridge asked caustically, but with an enigmatic smile.

"Think so? I *know* so!" replied Stevens, positively. "I always did like kids, and they always did like me—we fall for each other like ten thousand bricks falling down a well. Why, a kid—*any* kid—and I team up just like grace and poise. . . . What's gnawing on you anyway, to make you turn Cheshire cat all of a sudden? By the looks of that grin I'd say you had swallowed a canary of mine some way or other; but darned if I know that I've lost any," and he stared at his friend suspiciously.

"To borrow your own phrase, Steve, 'You'd be surprised,'" and Breckenridge, though making no effort to conceal his amusement, would say no more.

In a few minutes the door opened, and through it there stepped a grizzled four-striper. Almost hidden behind his massive form there was a girl, who ran up to Breckenridge and seized both his hands, her eyes sparkling.

"Hi, Breckie, you old darling! I knew that if we both kept after him long enough Dad would let me ride with you sometime. Isn't this *gorgeous?*"

Stevens was glad indeed that the girl's enthusiastic greeting of the pilot was giving him time to recover from his shock, for Director Newton's "little girl, Nadia" was not precisely what he had led himself to expect. Little she might be, particularly when compared with the giant frame of Captain King, or with Steve's own five-feet-eleven of stature and the hundred and ninety pounds of rawhide and whalebone that was his body, but child she certainly was not. Her thick, fair hair, cut in the square bob that was the mode of the moment, indicated that Nature had intended her to be a creamy blonde, but as she turned to be introduced to him, Stevens received another surprise—for she was one of those rare, but exceedingly attractive beings, a natural blonde with brown eyes and black eyebrows. Sun and wind had tanned her satin skin to a smooth and even shade of brown, and every movement of her lithe and supple body bespoke to the discerning mind a rigidly-trained physique.

"Doctor Stevens, you haven't met Miss Newton, I hear," the captain introduced them informally. "All the officers who are not actually tied down at their posts are anxious to do the honors of the vessel, but as I have received direct orders from the owners, I am turning her over to you—you are to show her around."

"Thanks, Captain, I won't mutiny a bit against such an order. I'm mighty glad to know you, Miss Newton."

"I've heard a lot about you, Doctor. Dad and Breckie here are always talking about the Big Three—what you have done and what you are going to do. I want to meet Doctor Brandon and Doctor Westfall, too," and her hand met his in a firm and friendly clasp. She turned to the captain, and Stevens, noticing that the pilot, with a quizzical expression, was about to say something, silenced him with a fierce aside.

"Clam it, ape, or I'll climb up you like a squirrel!" he hissed, and the grinning Breckenridge nodded assent to this demand for silence concerning children and nursemaids.

"Since you've never been out, Miss Newton, you'll want to see the whole works," Stevens addressed the girl. "Where do you want to begin? Shall we start at the top and work down?"

"All right with me," she agreed, and fell into step beside him. She was dressed in dove-gray from head to foot—toque, blouse, breeches, heavy stockings, and shoes were of the one shade of smooth, lustrous silk; and as they strolled together down the passage-way, the effortless ease and perfect poise of her carriage called aloud to every hard-schooled fibre of his own highly-trained being.

"We're a lot alike, you and I—do you know it?" he asked, abruptly and unconventionally.

"Yes, I've felt it, too," she replied frankly, and studied him without affectation. "It has just come to me what it is. We're both in fine condition and in hard training. You're an athlete of some kind, and I'm sure you're a star—I ought to recognize you, but I'm ashamed to say I don't. What do you do?"

"Swim."

"Oh, of course—Stevens, the great Olympic high and fancy diver! I would *never* have connected our own Doctor Stevens, the eminent mathematical physicist, with the King of the Springboard. Say, ever since I quit being afraid of the water I've had a yen to do that two-and-a-half twist of yours, but I never met anybody who knew it well enough to teach it to me, and I've almost broken my back forty times trying to learn it alone!"

"I've got you, now, too—American and British Womens' golf champion. Shake!" and the two shook hands vigorously, in mutual congratulation. "Tell you what—I'll give you some pointers on diving, and you can show me how to make a golf ball behave. Next to Norman Brandon, I've got the most vicious hook in captivity—and Norm can't help himself. He's left-handed, you know, and, being a southpaw, he's naturally wild. He slices all his woods and hooks all his irons. I'm consistent, anyway—I hook everything, even my putts."

"It's a bargain! What do you shoot?"

"Pretty dubby. Usually in the middle eighties—none of us play much, being out in space most of the time, you know—sometimes, when my hook is going particularly well, I go up into the nineties."

"We'll lick that hook," she promised, as they entered an elevator and were borne upward, toward the prow of the great interplanetary cruiser.

CHAPTER II

——But Does Not Arrive

"ALL out—we climb the rest of the way on foot," Stevens told his companion, as the elevator stopped at the uppermost passenger floor. They walked across the small circular hall and the guard on duty came to attention and saluted as they approached him.

"I have orders to pass you and Miss Newton, sir. Do you know all the combinations?"

"I know this good old tub better than the men that built her—I helped calculate her," Stevens replied, as he stepped up to an apparently blank wall of steel and deftly manipulated an almost invisible dial set flush with its surface. "This is to keep the passengers where they belong," he explained, as a section of the wall swung backward in a short arc and slid smoothly aside. "We will now proceed to see what makes it tick."

Ladder after ladder of steel they climbed, and bulkhead after bulkhead opened at Stevens's knowing touch. At each floor the mathematician explained to the girl the operation of the machinery there automatically at work—devices for heating and cooling, devices for circulating, maintaining, and purifying the air and the water—in short, all the complex mechanism necessary for the comfort and convenience of the human cargo of the liner.

Soon they entered the conical top compartment, a room scarcely fifteen feet in diameter, tapering sharply upward to a hollow point some twenty feet above them. The true shape of the room, however, was not immediately apparent, because of the enormous latticed beams and girders which braced the walls in every direction. The air glowed with the violet light of the twelve great ultra-light projectors, like searchlights with three-foot lenses, which lined the wall. The floor beneath their feet was not a level steel platform, but seemed to be composed of many lenticular sections of dull blue alloy.

"We are standing upon the upper lookout lenses, aren't we?" asked the girl. "Is that perfectly all right?"

"Sure. They're so hard that nothing can scratch them, and of course Roeser's Rays go right through our bodies, or any ordinary substance, like a bullet through a hole in a Swiss cheese. Even those lenses wouldn't deflect them if they weren't solid fields of force."

As he spoke, one of the ultra-lights flashed around in a short, quick arc, and the girl saw that instead of the fierce glare she had expected, it emitted only a soft violet light. Nevertheless she dodged involuntarily and Stevens touched her arm reassuringly.

"All x, Miss Newton—they're as harmless as mice. They hardly ever have to swing past the vertical, and even if one shines right through you you can look it right in the eye as long as you want to—it can't hurt you a bit."

"No ultra-violet at all?"

"None whatever. Just a color—one of the many remaining crudities of our ultra-light vision. A lot of good men are studying this thing of direct vision, though, and it won't be long before we have a system that will really work."

"I think it's all perfectly wonderful!" she breathed. "Just think of traveling in comfort through empty space, and of actually seeing through seamless steel walls, without even a sign of a window! How can such things be possible?"

"I'll have to go pretty well back," he warned, "and any adequate explanation is bound to be fairly deep wading in spots. How technical can you stand it?"

"I can go down with you middling deep—I took a lot of general science, and physics through advanced mechanics. Of course, I didn't get into any such highly specialized stuff as sub-electronics or Roeser's Rays, but if you start drowning me, I'll yell."

"That's fine—you can get the idea all x, with that to go on. Let's sit down here on this girder. Roeser didn't do it all, by any means, even though he got credit for it—he merely helped the Martians do it. The whole thing started, of course, when Goddard shot his first rocket to the moon, and was intensified when Roeser so perfected his short waves that signals were exchanged with Mars—signals that neither side could make any sense out of. Goddard's pupils and followers made bigger and better rockets, and finally got one that could land safely upon Mars. Roeser, who was a mighty keen

bird, was one of the first voyagers, and he didn't come back—he stayed there, living in a space-suit for three or four years, and got a brand-new education. Martian science always was hot, you know, but they were impractical. They were desperately hard up for water and air, and while they had a lot of wonderful ideas and theories, they couldn't overcome the practical technical difficulties in the way of making their ideas work. Now putting other peoples' ideas to work was Roeser's long suit—don't think that I'm belittling Roeser at all, either, for he was a brave and far-sighted man, was no mean scientist, and was certainly one of the best organizers and synchronizers the world has ever known—and since Martian and tellurian science complemented each other, so that one filled in the gaps of the other, it wasn't long until fleets of space-freighters were bringing in air and water from Venus, which had more of both than she needed or wanted.

"Having done all he could for the Martians and having learned most of the stuff he wanted to know, Roeser came back to Tellus and organized Interplanetary, with scientists and engineers on all three planets, and set to work to improve the whole system, for the vessels they used then were dangerous—regular mankillers, in fact. At about this same time Roeser and the Interplanetary Corporation had a big part in the unification of the world into one nation, so that wars could no longer interfere with progress.

"WITH this introduction I can get down to fundamentals. Molecules are particles of the first order, and vibrations of the first order include sound, light, heat, electricity, radio, and so on. Second order, atoms—extremely short vibrations, such as hard X-rays. Third order, electrons and protons, with their accompanying Millikan, or cosmic, rays. Fourth order, sub-electrons and sub-protons. These, in the material aspect, are supposed to be the particles of the fourth order, and in the energy aspect they are known as Roeser's rays. That is, these fourth-order rays and particles seem to partake of the nature of both energy and matter. Following me?"

"Right behind you," she assured him. She had been listening intently, her wide-spaced brown eyes fastened upon his face.

"Since these Roeser's rays, or particles or rays of the fourth order, seem to be both matter and energy, and since the rays can be converted into what is supposed to be the particles, they have been thought to be the things from which both electrons and protons were built. Therefore, everybody except Norman Brandon has supposed them the ultimate units of creation, so that it would be useless to try to go any further. . . ."

"Why, we were taught that they *are* the ultimate units!" she protested.

"I know you were—but we really don't know anything, except what we have learned empirically, even about our driving forces. What is called the fourth-order particle is absolutely unknown, since nobody has been able to detect it, to say nothing of determining its velocity or other properties. It has been assumed to have the velocity of light only because that hypothesis does not conflict with observational data. I'm going to give you the generally accepted idea, since we have nothing definite to offer in its place, but I warn you that that idea is very probably wrong. There's a lot of deep stuff down there hasn't been dug up yet. In fact, Brandon thinks that the product of conversion isn't what we think it is, at all—that the actual fundamental unit and the primary mechanism of the transformation lie somewhere below the fourth order, and possibly even below the level of the ether—but we haven't been able to find a point of attack yet that will let us get in anywhere. However, I'm getting 'way ahead of our subject. To get back to it, energy can be converted into something that acts like matter through Roeser's rays, and that is the empirical fact underlying the drive of our space-ships, as well as that of almost all other vehicles on all three planets. Power is generated by the great waterfalls of Tellus and Venus—water's mighty scarce on Mars, of course, so most of our plants there use fuel—and is transmitted on light beams by means of powerful fields of force to the receptors, wherever they may be. The individual transmitting fields and receptors are really simply matched-frequency units, each matching the electrical characteristics of some particular and unique beam of force. This beam is composed of Roeser's rays, in their energy aspect. It took a long time to work out this tight-beam transmission of power, but it was fairly simple after they got it."

He took out a voluminous notebook, at the sight of which Nadia smiled.

"A computer might forget to dress, but you'd never catch one without a full magazine pencil and a lot of blank paper," he grinned in reply and went on, writing as he talked.

"For any given frequency, *f*, and phase angle, *theta*, you integrate, between limits zero and *pi* divided by two, sine theta d. . . ."

"Hold it—I'm sinking!" Nadia exclaimed. "I don't integrate at all unless it is absolutely necessary. As long as you stick to general science, I'm right on your heels, but please lay off of integrations and all that—most especially stay away from those terrible electrical integrations. I always did think that they were the most poisonous kind known. I want only a general idea—that's all that I can understand, anyway."

"Sure, I forgot—guess I was getting in deeper than is necessary, especially since this whole thing of beam transmission is pretty crude yet and is bound to change a lot before long. There is so much loss that when we get more than a few hundred million kilometers away from a power-plant we lose reception entirely. But to get going again, the receptors receive the beam and from them the power is sent to the accumulators, where it is stored. These accumulators are an outgrowth of the storage battery. The theory of the accumulator is. . . ."

"Lay off the theory, please!" the listener interrupted. "I understand perfectly without it. Energy is stored in the accumulators—you put it in and take it out. That's all that is necessary."

"I'D like to give you some of the theory—but, after all, it wouldn't add much to your understanding of the working of things, and it might mix you up, as some of it is pretty deep stuff. Then, too, it would take a lot of time, and the rest of your friends would squawk if I kept you here indefinitely. From the accumulators, then, the power is fed to the converters, each of which is backed by a projector. The converters simply change the aspect of the rays, from the energy aspect to

the material aspect. As soon as this is done, the highly-charged particles—or whatever they are—thus formed are repelled by the terrific stationary force maintained in the projector backing the converter. Each particle departs with a velocity supposed to be that of light, and the recoil upon the projector drives the vessel, or car, or whatever it is attached to. Still with me?"

"Struggling a little, but my nose is still above the surface. These particles, being so infinitesimally small that they cannot even be detected, go right through any substance without any effect—they are not even harmful."

"Exactly. Now we are in position to go ahead with the lights, detectors, and so on. The energy aspect of the rays you can best understand as simply a vibration in the ether—an extremely high frequency one. While not rigidly scientific, that is close enough for you and me. Nobody knows what the stuff really is, and it cannot be explained or demonstrated by any model or concept in three-dimensional space. Its physical-mathematical interpretation, the only way in which it can be grasped at all, requires sixteen co-ordinates in four dimensions, and I don't suppose you'd care to go into that."

"I'll say I wouldn't!" she exclaimed, feelingly.

"Well, anyway, by the use of suitable fields of force it can be used as a carrier wave. Most of this stuff of the fields of force—how to carry the modulation up and down through all the frequency changes necessary—was figured out by the Martians ages ago. Used as a pure carrier wave, with a sender and a receiver at each end, it isn't so bad—that's why our communicator and radio systems work as well as they do. They are pretty good, really, but the ultra-light vision system is something else again. Sending the heterodyned wave through steel is easy, but breaking it up, so as to view an object and return the impulses, was an awful job and one that isn't half done yet. We see things, after a fashion and at a distance of a few kilometers, by sending an almost parallel wave from a twin-projector to disintegrate and double back the viewing wave. That's the way the lookout plates and lenses work, all over the ship—from the master-screens in the control room to the plates of the staterooms and lifeboats and the viewing-areas of the promenades. But the whole system is a rotten makeshift, and . . ."

"Just a minute!" exclaimed the girl. "I and everybody else have been thinking that everything is absolutely perfect; and yet every single thing you have talked about, you have ended up by describing as 'unknown,' 'rudimentary,' 'temporary,' or a 'makeshift.' You speak as though the entire system were a poor thing that will have to do until something better has been found, and that nobody knows anything about anything! How do you get that way?"

"By working with Brandon and Westfall. Those birds have got real brains and they're on the track of something that will, in all probability, be as far ahead of Roeser's rays as our present system is ahead of the science of the seventeenth century."

"Really?" she looked at him in astonishment. "Tell me about it."

"Can't be done," he refused. "I don't know much about it—even they didn't know any too much about some of it when I had to come in. And what little I do know I can't tell, because it isn't mine."

"But you're working with them, aren't you?"

"Yes, in the sense that a small boy helps his father build a house. They're the brains—I simply do some figuring that they don't want to waste time doing."

Nadia, having no belief whatever in his modest disclaimer, but in secret greatly pleased by his attitude, replied:

"Of course you couldn't say anything about an unfinished project—I shouldn't have asked. Where do we go from here?"

"Down the lining of the hull, outside the passengers' quarters to the upper dirigible projectors," and he led the way down a series of steep steel stairways, through bulkheads and partitions of steel. "One thing I forgot to tell you about—the detectors. They're worked on the same principle as the lights, and are just about as efficient. Instead of light, though, they send out cones of electro-magnetic waves, which set up induced currents in any conductor encountered beyond our own shell. Since all dangerous meteorites have been shown to contain conducting material, that is enough to locate them, for radio finders automatically determine the direction, distance, and magnitude of the disturbance, and swing a light on it. That was what happened when that light swung toward us, back there in the prow."

"Are there any of those life-boats, that I've heard discussed so much lately, near here?" asked the girl.

"Lots of 'em—here's one right here," and at the next landing he opened a vacuum-insulated steel door, snapped on a light, and waved his hand. "You can't see much of it from here, but it's a complete space-ship in itself, capable of maintaining a dozen or fifteen persons during a two-weeks' cruise in space."

"Why isn't it a good idea to retain them? Accidents are still possible, are they not?"

"Of course, and there is no question of doing away with them entirely. Modern ships, however, have only enough of them to take care of the largest number of persons ever to be carried by the vessel."

"Has the *Arcturus* more than she needs?"

"I'll say she has, and more of everything else, except room for pay-load."

"I've heard them talking about junking her. I think it's a shame."

"So do I, in a way—you see, I helped design her and her sister-ship, the *Sirius*, which Brandon and Westfall are using as a floating laboratory. But times change, and the inefficient must go. She's a good old tub, but she was built when everybody was afraid of space, and we had to put every safety factor into her that we could think of. As a result, she is four times as heavy as she should be, and that takes a lot of extra power. Her skin is too thick. She has too many batteries of accumulators, too many life-boats, too many bulkheads and air-breaks, too many and too much of everything. She is so built that if she should break up out in space, nobody would die if they lived through the shock—there are so many bulkheads, air-breaks, and life-boats that no matter how many pieces she broke up into, the survivors would find themselves in something able to navigate. That excessive construction is no longer necessary. Modern ships carry ten times the pay-load on one-quarter of the power that this old battle-wagon uses. Even though she's only four years old, she's a relic of the days when we used to slam through on the ecliptic route, right through all the meteoric stuff that is always

there—trusting to heavy armor to ward off anything too small for the observers and detectors to locate. Now, with the observatories and check-stations out in space, fairly light armor is sufficient, as we route ourselves well away from the ecliptic and so miss all the heavy stuff. So, badly as I hate to see her go there, the old tub is bound for the junk-yard."

A FEW more flights of stairs brought them to the upper band of dirigible projectors, which encircled the hull outside the passengers' quarters, some sixty feet below the prow. They were heavy, search-light-like affairs mounted upon massive universal bearings, free to turn in any direction, and each having its converter nestling inside its prodigious field of force. Stevens explained that these projectors were used in turning the vessel and in dodging meteorites when necessary, and they went on through another almost invisible door into a hall and took an elevator down to the main corridor.

"Well, you've seen it, Miss Newton." Stevens said regretfully, as he led her toward the captain's office. "The lower half is full of heavy stuff—accumulators, machinery, driving projectors, and such junk, so that the center of gravity is below the center of action of the driving projectors. That makes stable flight possible. It's all more or less like what we've just seen, and I don't suppose you want to miss the dance—anyway, a lot of people want to dance with you."

"Wouldn't you just as soon show me through the lower half as dance?"

"Rather, lots!"

"So would I. .I can dance any time, and I want to see everything. Let's go!"

Down they went, past battery after battery of accumulators; climbing over and around the ever-increasing number of huge steel girders and bracers; through mazes of heavily insulated wiring and conduits; past mass after mass of automatic machinery which Stevens explained to his eager listener. They inspected one of the great driving projectors, which, built rigidly parallel to the axis of the ship and held immovably in place by enormous trusses of steel, revealed neither to the eye nor to the ear any sign of the terrific force it was exerting. Still lower they went, until the girl had been shown everything, even down to the bottom ultra-lights and stern braces.

"Tired?" Stevens asked, as the inspection was completed.

"Not very. It's been quite a climb, but I've had a wonderful time."

"So have I," he declared, positively. "I know what—we'll crawl up into one of these stern lifeboats and make us a cup of coffee before we climb back. With me?"

"'Way ahead of you!" Nadia accepted the invitation enthusiastically, and they made their way to the nearest of the miniature space-cruisers. Here, although no emergency had been encountered in all the four years of the vessel's life, they found everything in readiness, and the two soon had prepared and eaten a hearty luncheon.

"Well, I can't think of any more excuses for monopolizing you, Miss Newton, so I suppose I'll have to take you back. Believe me, I've enjoyed this more than you can realize—I've. . . ."

He broke off and listened, every nerve taut. "What was that?" he exclaimed.

"What was what? I didn't hear anything?"

"Something screwy somewhere! I felt a vibration, and anything that'd make this mountain of steel even quiver must have given us one gosh-awful nudge. There's another!"

The girl, painfully tense, felt only a barely perceptible tremor, but the computer, knowing far better than she the inconceivable strength and mass of that enormous structure of solidly braced hardened steel, sprang into action. Leaping to the small dirigible look-out plate, he turned on the power and swung it upward.

"GREAT suffering snakes!" he ejaculated, then stood mute, for the plate revealed a terrible sight. The entire nose of the gigantic craft had been sheared off in two immense slices as though clipped off by a gigantic sword, and even as they stared, fascinated, at the sight, the severed slices were drifting slowly away. Swinging the view along the plane of cleavage, Stevens made out a relatively tiny ball of metal, only fifty feet or so in diameter, at a distance of perhaps a mile. From this ball there shot a blinding plane of light, and the *Arcturus* fell apart at the midsection, the lower half separating clean from the upper portion, which held the passengers. Leaving the upper half intact, the attacker began slicing the lower, driving half into thin, disk-shaped sections. As that incandescent plane of destruction made its first flashing cut through the body of the *Arcturus*, accompanied by an additional pyrotechnic display of severed and short-circuited high-tension leads, Stevens and Nadia suddenly found themselves floating weightless in the air of the room. Still gripping the controls of the look-out plate, Stevens caught the white-faced girl with one hand, drew her down beside him, and held her motionless while his keen mind flashed over all the possibilities of the situation and planned his course of action.

"They're apparently slicing us pretty evenly, and by the looks of things, one cut is coming right about here," he explained rapidly, as he found a flashlight and drew his companion through the door and along a narrow passage. Soon he opened another door and led her into a tiny compartment so low that they could not stand upright—a mere cubicle of steel. Carefully closing the door, he fingered dials upon each of the walls of the cell, then folded himself up into a comfortable position, instructed Nadia to do the same, and snapped off the light.

"Please leave it on," the shaken girl asked. "It's so ghastly!"

"We'd better save it, Nadia," he advised, pressing her arm reassuringly. "It's the only light we've got, and we may need it worse later on—its life is limited, you know."

"Later on? Do you think we'll need anything—later on?"

"Sure! Of course they may get us, Nadia, but this little tertiary air-break is a mighty small target for them to hit. And if they miss us, as I think they will, there's a larger room opening off each wall of this one—at least one of which will certainly be left intact. From any one of those rooms we can reach a life-boat. Of course, it's a little too much to expect that any one of the life-boats will be left whole, but they're bulkheaded, too, you know, so that we can be sure of finding something able to navigate—providing we can make our get-away. Believe me, ace, I'm sure glad we're aboard the old

Arcturus right now, with all her safety-devices, instead of on one of the modern liners. We'd be sunk right."

"I felt sunk enough for a minute—I'm feeling better now, though, since you are taking it so calmly."

"Sure—why not? A man's not dead until his heart stops beating, you know—our turn'll come next, when they let up a little."

"But suppose they change the width of their slices, and hit this cubby, small as it is?"

"It's be just too bad," he shrugged. "In that case, we'd never know what hit us, so it's no good worrying about it. But say, we might do something at that, if they didn't hit us square. I can move fairly fast, and might be able to get a door open before the loss of pressure seals it. We'll light the flash . . . here, you hold it, so that I can have both hands free. Put both arms around me, just under the arms, and stick to me like a porous plaster, because if I have to move at all, I'll have to jump like chain lightning. Shine the beam right over there, so it'll reflect and light up all the dials at once. There . . . hold on tight! Here they come!"

As he spoke, a jarring shudder shook one side of their hiding-place, then, a moment later, the phenomenon was repeated, but with much less force, upon the other side. Stevens sighed with relief, took the light, and extinguished it.

"Missed us clean!" he exulted. "Now, if they don't find us, we're all set."

"How can they possibly find us? I seem to be always worried about the wrong things, but I should think that their finding us would be the least of our troubles."

"Don't judge their vision system by ours—they've got everything, apparently. However, their apparatus may not be delicate enough to spot us in a space this small when their projectors flash through it, as they probably will. Then, too, there's a couple of other big items in our favor—nobody else is in the entire lower half, since all this machinery down here is either automatic or else controlled from up above, so they won't be expecting to see anybody when they get down this far; and we aren't at all conspicuous. We're both dressed in gray—your clothes in particular are almost exactly the color of this armor-plate—so altogether we stand a good chance of being missed."

"What shall we do now?"

"Nothing whatever—wish we could sleep for a couple of hours, but of course there's no hope of that. Stretch out here, like that—you can't rest folded up like an accordion—and I'll lie down diagonally across the room. There's just room for me that way. That's one advantage of weightlessness—you can lie down standing on your head, and go to sleep and like it. But I forgot—you've never been weightless before, have you? Does it make you sick?"

"Not so much, now, except that I feel awfully weird inside. I was horribly dizzy and nauseated at first, but it's going away."

"THAT'S good—it makes lots of people pretty sick. In fact, some folks get awfully sick and can't seem to get used to it at all. It's the canals in the inner ear that do most of it, you know. However, if you're as well as that already, you'll be a regular spacehound in half an hour. I've been weightless for weeks at a stretch, out in the *Sirius*, and now I've got so I really like it. Here, we'd better keep in touch." He found her hand and tucked it under his arm. "Stabilize our positions more, besides keeping us from getting too lonesome, here in the dark," he concluded, in a matter-of-fact voice.

"Thanks for saying 'us'—but you would, wouldn't you?" and a wave of admiration went through her for the real and chivalrous manhood of the man with whom she had been forced by circumstances to cast her lot. "How long must we stay here?"

"As long as the air lasts, and I'd like to stay here longer than that. We don't want to move around any more than we absolutely have to until their rays are off of us, and we have no way of knowing how long that will be. Also, we'd better keep still. I don't know what kind of an audio system they've got, but there's no use taking unnecessary chances."

"All x—I'm an oyster's little sister," and for many minutes the two remained motionless and silent. Now and then Nadia twitched and started at some vague real or imaginary sound—now and then her fingers tightened upon his biceps—and he pressed her hand with his great arm in reassurance and understanding. Once a wall of their cell resounded under the impact of a fierce blow and Stevens instantly threw his arm around the girl, twisting himself between her and the threatened wall, ready for any emergency. But nothing more happened; the door remained closed, the cell stayed bottle-tight, and time wore slowly on. All too soon the unmistakeable symptoms of breathing an unfit atmosphere made themselves apparent and Stevens, after testing each of the doors, drew the girl into a larger room, where they breathed deeply of the fresh, cool air.

"How did you know that this room was whole?" asked Nadia. "We might have stepped out into space, mightn't we?"

"No; if this room had lost its tightness, the door wouldn't have opened. They won't open if there's a difference of one kilogram pressure on the two sides. That's how I knew that the room we were in at first was cut in two—the door into that air-break wouldn't move."

"What comes next?"

"I don't know exactly what to do—we'd better hold a little council of war. They may have gone. . . ." Stevens broke off as the structure began to move, and they settled down upon what had been one of the side-walls. Greater and greater became the acceleration, until their apparent weight was almost as much as it would have been upon the Earth, at which point it became constant. ". . . but they haven't," he continued the interrupted sentence. "This seems to be a capture and seizure, as well as an attack, so we'll have to take the risk of looking at them. Besides, it's getting cold in here. One or two of the adjoining cells have apparently been ruptured and we're radiating our heat out into space, so we'll have to get into a life-boat or freeze. I'll go pick out the best one. Wonder if I'd better take you with me, or hide you and come back after you?"

"Don't worry about that—I'm coming with you," Nadia declared, positively.

"Just as well, probably," he assented, and they set out. A thorough exploration of all the tight connecting cells revealed that not a lifeboat within their reach remained intact, but that habitable and navigable portions of three such craft were available. Selecting the most completely

equipped of these, they took up their residence therein by entering it and closing the massive insulating door. Stevens disconnected all the lights save one, and so shielded that one before turning it on that it merely lightened the utter darkness into a semi-permeable gloom. He then stepped up to the lookout plate, and with his hand upon the control, pondered long the possible consequences of what he wished to do.

"What harm would it do to take just a little peek?"

"I don't know—that's the dickens of it. Maybe none, and then again, maybe a lot. You see, we don't know who or what we are up against. The only thing we know is that they've got us beat a hundred ways, and we've got to act accordingly. We've got to chance it sometime, though, if we can ever get away, so we might as well do it now. I'll put it on very short range first, and see what we can see. By the small number of cells we've got here I'm afraid they've split us up lengthwise, too—so that instead of having a whole slice of the old watermelon to live in, we've got only about a sixth of one—shaped about like a piece of restaurant pie. One thing I can do, though. I'll turn on the communicator receiver and put it on full coverage—maybe we can hear something useful."

Putting a little power upon the visiray plate, he moved the point of projection a short distance from their hiding-place, so that the plate showed a view of the wreckage. The upper half of the vessel was still intact, the lower half a jumble of sharply-cut fragments. From each of the larger pieces a brilliant ray of tangible force stretched outward. Suddenly their receiver sounded behind them, as the high-powered transmitter in the telegraph room tried to notify headquarters of their plight.

"*Arcturus* attacked and cut up being taken tow. . . ."

Rapidly as the message was uttered the transmitter died with a rattle in the middle of a word, and Nadia looked at Stevens with foreboding in her eyes.

"They've got something, that's one thing sure, to be able to neutralize our communicator beams that way," he admitted. "Not so good—we'll have to play this close to our vests, girl!"

"Are you just trying to cheer me up, or do you really think we have a chance?" she demanded. "I want to know just where we stand."

"I'm coming clean with you, no kidding. If we can get away, we'll be all x, because I'll bet a farm that by this time Brandon's got everything those birds have, and maybe more. They beat us to it, that's all. I'm kind of afraid, though, that getting away isn't going to be quite as simple as shooting fish down a well."

FAR ahead of them a port opened, a lifeboat shot out at its full power, and again their receiver tried to burst into sound, but it was a vain attempt. The sound died before one complete word could be uttered, and the lifeboat, its power completely neutralized by the rays of the tiny craft of the enemy, floated gently back toward the mass of its parent and accompanied it in its headlong flight. Several more lifeboats made the attempt, as the courageous officers of the *Arcturus*, some of whom had apparently succeeded in eluding the vigilance of the captors, launched the little shells from various ports; but as each boat issued, its power was neutralized and it found itself dragged helplessly along in the grip of one of those mysterious, brilliant rays of force. At least one hidden officer must have been watching the fruitless efforts, for the next lifeboat to issue made no attempt, either to talk or to flee, but from it there flamed out into space a concentrated beam of destruction—the terrible ray of annihilation, against which no known substance could endure for a moment; the ray which had definitely outlawed war. But even that frightful weapon was useless—it spent its force harmlessly upon an impalable, invisible barrier, a hundred yards from its source, and the bold lifeboat disappeared in one blinding explosion of incandescence as the captor showed its real power in retaliation. Stevens, jaw hard-set, leaped from the screen, then brought himself up so quickly that he skated across the smooth steel floor. Shutting off the lookout plate, he led the half-fainting girl across the room to a comfortable seat and sat down beside her—raging, but thoughtful. Nadia soon recovered.

"Why are you acting so contrary to your nature—is it because of *me*?" she demanded. "A dozen times I've seen you start to do something and then change your mind. I *will not* be a load on you nor hinder you in anything you want to do."

"I told your father I'd look after you, and I'm going to do it," he replied, indirectly. "I would do it anyway, of course—even if you are ten or twelve years older than I thought you were."

"Yes, Dad never has realized that I'm more than eight years old. I see—you were going out there and be slaughtered?" He flushed, but made no reply. "In that case I'm glad I'm here—that would have been silly. I think we'd better hold that council of war you mentioned a while ago, don't you?"

"I need a smoke—do you indulge?"

"No thanks. I tried it a few times at school, but never liked it."

He searched his pockets, bringing to light an unopened package and a battered remnant which proved to contain one dilapidated cigarette. He studied it thoughtfully. "I'll smoke this wreck," he decided, "while it's still smokable. We'll save the rest of them—I'm afraid it'll be a long time between smokes. Well, let's confer!"

"This will have to be a one-sided conference. I don't imagine that any of my ideas will prove particularly helpful. You talk and I'll listen.

"You can't tell what ideas may be useful—chip in any time you feel the urge. Here's the dope, as I see it. They're highly intelligent creatures and are in all probability neither Martians nor Venerians. If any of them had any such stuff as that, some of us would have known about it and, besides, I don't believe they would have used it in just that way. Mercury is not habitable, at least for organic beings; and we have never seen any sign of any other kind of inhabitants who could work with metals and rays. They're probably from Jupiter, although possibly from further away. I say Jupiter, because I would think, judging from the small size of the ship, that it may still be in the experimental stage, so that they probably didn't come from any further away than Jupiter. Then, too, if they were very numerous, somebody would have sighted one before. I'd give my left leg and four fingers for one good look at the inside of that ship."

"Why didn't you take it, then? You never even looked toward it, after that one first glimpse."

"I'll say I didn't—the reason being that they may have automatic detectors, and as I have suggested before, our system of vision is so crude that its use could be detected with a clothesline or a basket full of scrap iron. But to

resume: Their aim is to capture, not destroy, since they haven't killed anybody except the one crew that attacked them. Apparently they want to study us or something. However, they don't intend that any of us shall get away, nor even send out a word of what has happened to us. Therefore it looks as though our best bet is to hide now, and try to sneak away on them after a while—direct methods won't work. Right?"

"You sound lucid. Is there any possibility of getting back, though, if we got anywhere near Jupiter? It's so far away!"

"It's a long stretch from Jupiter to any of the planets where we have power-plants, all right—particularly now, when Mars and Tellus are subtending an angle of something more than ninety degrees at the sun, and Venus is between the two, while Jupiter is clear across the sun from all three of them. Even when Jupiter is in mean opposition to Mars, it is still some five hundred and fifty million kilometers away, so you can form some idea as to how far it is from our nearest planet now. No, if we expect to get back under our own power, we've got to break away pretty quick—these lifeboats have very little accumulator capacity, and the receptors are useless above about three hundred million kilometers. . . ."

"But it'll take us a long time to go that far, won't it?"

"Not very. Our own ships, using only the acceleration of gravity, and both plus and minus at that, make the better than four hundred million kilometers of the long route to Mars in five days. These birds are using almost that much acceleration, and I don't see how they do it. They must have a tractor ray. Brandon claimed that such a thing was theoretically possible, but Westfall and I couldn't see it. We ragged him about it a lot—and he was right. I thought, of course, they'd drift with us, but they are using power steadily. They've got *some* system!"

"Suppose they could be using intra-atomic energy? We were taught that it was impossible, but you've shattered a lot of my knowledge today."

"I wouldn't want to say definitely that it is absolutely impossible, but the deeper we go into that line, the more unlikely intra-atomic energy power-plants become. No, they've got a real power-transmission system—one that can hold a tight beam together a lot farther than anything we have been able to develop, that's all. Well, we've given them quite a lot of time to get over any suspicion of us, let's see if we can sneak away from them."

BY short and infrequent applications of power to the dirigible projectors of the life-boat, Stevens slowly shifted the position of the fragment which bore their craft until it was well clear of the other components of the mass of wreckage. He then exerted a very small retarding force, so that their bit would lag behind the procession, as though it had accidently been separated. But the crew of the captor was alert, and no sooner did a clear space show itself between them and the mass than a ray picked them up and herded them back into place. Stevens then nudged other pieces so that they fell out, only to see them also rounded up. Hour after hour he kept trying—doing nothing sufficiently energetic to create any suspicion, but attempting everything he could think of that offered any chance of escape from the clutches of their captors. Immovable at the plate, his hands upon the controls, he performed every insidious maneuver his agile brain could devise, but he could not succeed in separating their vehicle from its fellows. Finally, after a last attempt, which was foiled as easily as were its predecessors, he shut off his controls and turned to his companion with a grin.

"I didn't think I could get away with it—they're keen, that gang—but I had to keep at it as long as it would have done us any good."

"Wouldn't it do us any good now?"

"Not a bit—we're going so fast that we couldn't stop—we're out of even radio range of our closest power-plant. We'll have to put off any more attempts until they slow us down. They're fairly close to at least one of the moons of Jupiter, we'll have our best chance—so good, in fact, that I really think we can make it."

"But what good would that do us, if we couldn't get back?" Dire foreboding showed in her glorious eyes.

"Lots of things not tried yet, girl, and we'll try them all. First, we get away. Second, we try to get in touch with Norman Brandon. . . ."

"How? No known radio will carry half that far."

"No, but I think that a radio as yet unknown may be able to—and there is a bare possibility that I'll be able to communicate."

"Oh wonderful—that lifts a frightful load off my mind," she breathed.

"But just a minute—I said I'd come clean with you, and I will. The odds are all against us, no matter what we do. If that unknown radio won't work—and it probably won't—there are several other things we can try, but they're all pretty slim chances. Even if we get away, it'll probably be about the same thing as though you were to be marooned on a desert island without any tools, and with your rescue depending upon your ability to build a high-powered radio station with which to call to a mainland for help. However, if we don't try to get away, our only alternative is letting them know we're here, and joining our friends in captivity."

"And then what?"

"You know as much as I do. Imprisonment and restraint, certain; death, possible; return to Earth, almost certainly impossible—life as guests, highly improbable."

"I'm with you, Steve, all the way."

"Well, it's time to spring off—we've both been awake better than fifty hours. Personally, I'm all in, and you're so near dead that you're a physical wreck. We'll get us a bite of supper and turn in."

An appetizing supper was prepared from the abundant stores and each ate a heartier meal than either would have believed possible. Stevens considered his unopened package of cigarettes, then regretfully put it back into his pocket still unopened and turned to Nadia.

"Well, little fellow, it's time to shove off, and then some. You might as well sleep here, and I'll go in there. If anything scares you, yell. Good-night, old trapper!"

"Wait a minute, Steve." Nadia flushed, and her brown eyes and black eyebrows, in comparison with her golden-blond hair, lent her face a quizzical, elfin expression that far belied her feelings as she stared straight into his eyes. "I've never even been away from the Earth before, and with all this happening I'm simply scared to death. I've been trying to hide it, but I couldn't stand it alone, and we're going to be together too long and too close for senseless conventions to affect us. There's two bunks over there—why don't you sleep in one of them?"

He returned her steadfast gaze for a moment in silence.

"All x with me, Nadia," he answered, keeping out of his voice all signs of the tenderness he felt for her, and of his very real admiration for her straightforward conduct in a terrifying situation. "You trust me, then?"

"*Trust* you! Don't be silly—I know you! I know you, and I know Brandon and Westfall—I know what you've done, and exactly the kind of men you are. *Trust* you!

"Thanks, old golf-shootist," and promises were made and received in a clasp from which Nadia's right hand, strong as it was, emerged slightly damaged.

"By the way, what is your first name, fellow-traveller?" she asked in lighter vein. "Nobody, not even Dad or Breckie, ever seems to call you anything but 'Steve' when they talk about you." She was amazed at the effect of her innocent question, for Stevens flushed to his hair and spluttered.

"It's *Percy*!" He finally snorted. "Percival Van Schravendyck Stevens. Wouldn't that tear it?"

"Why, I think Percival's a real nice name!"

"Silence!" he hissed in burlesque style. "Young woman, I have revealed to you a secret known to but few living creatures. On your life, keep it inviolate!"

"Oh, very well, if you insist. Good-night—Steve!" and she gave him a radiant and honest smile; the first smile he had seen since the moment of the attack.

CHAPTER III

Castaways Upon Ganymede

UPON awakening, the man's first care was to instruct the girl in the operation of the projectors, so that she could keep the heavily-armored edge of their small section, which she had promptly christened "The Forlorn Hope," between them and the grinding, clashing mass of wreckage, and thus, if it should become necessary, protect the relatively frail inner portions of their craft from damage.

"Keep an eye on things for a while, Nadia," he instructed, as soon as she could handle the controls, "and don't use any more power than is absolutely necessary. We'll need it all, and besides, they can probably detect anything we can use. There's probably enough leakage from the ruptured accumulator cells to mask quite a little emission, but don't use much. I'm going to see what I can do about making this whole wedge navigable."

"Why not just launch what's left of this lifeboat? It's space-worthy, isn't it?"

"Yes, but it's too small. Two or three of the big dirigible projectors of the lower band are on the rim of this piece-of-pie-shaped section we're riding, I think. If so, and if enough batteries of accumulators are left intact to give them anywhere nearly full power, we can get an acceleration that will make a lifeboat look sick. Those main dirigibles, you know, are able to swing the whole mass of the *Arcturus*, and what they'll do to this one chunk of it—we've got only a few thousand tons of mass in this piece—will be something pretty. Also, having the metal may save us months of time in mining it."

He found the projectors, repaired or cut out the damaged accumulator cells, and reconnected them through the controls of the lifeboat. He moved into the "engine-room" the airtanks, stores, and equipment from all the other fragments which, by means of a space-suit, he could reach without too much difficulty. From the battery rooms of those fragments—open shelves, after being sliced open by the shearing ray—he helped himself to banks of accumulator cells from the enormous driving batteries of the ill-fated *Arcturus*, bolting them down and connecting them solidly until almost every compartment of their craft was one mass of stored-up energy.

Days fled like hours, so furiously busy were they in preparing their peculiar vessel for a cruise of indefinite duration. Stevens cut himself short on sleep and snatched his meals in passing; and Nadia, when not busy at her own tasks of observing, housekeeping, and doing what little piloting was required, was rapidly learning to wield most effectively the spanner and pliers of the mechanic and electrician.

"I'm afraid our time is getting short, Steve," she announced, after making an observation. "It looks as though we're getting wherever it is we're going."

"Well, I've got only two more jobs to do, but they're the hardest of the lot. It is Jupiter, or can you tell yet?"

"Jupiter or one of its satellites, I think, from the point where they reversed their power. Here's the observation you told me to take."

"Looks like Jupiter," he agreed, after he had rapidly checked her figures. "We'll pass very close to one of those two satellites—probably Ganymede—which is fine for our scheme. All four of the major satellites have water and atmosphere, but Ganymede, being largest, is best for our purposes. We've got a couple of days yet—just about time to finish up. Let's get going—you know what to do."

"Steve, I'm afraid of it. It's too dangerous—isn't there some other way?"

"None that I can see. The close watch they're keeping on every bit of this junk makes it our only chance for a get-away. I'm pretty sure I can do it—but if I should happen to get nipped, just use enough power to let them know you're here, and you won't be any worse off than if I hadn't tried to pull off this stunt."

He donned a space-suit, filled a looped belt with tools, picked up a portable power-drill, and stepped into the tiny air-lock. Nadia deftly guided their segment against one of the larger fragments and held it there with a gentle, steady pressure, while Stevens, a light cable paying out behind him, clambered carefully over the wreckage, brought his drill into play, and disappeared inside the huge wedge. In less than an hour he returned without mishap and reported to the glowing girl.

"Just like shooting fish down a well! Most of the accumulator cells were tight, and installing the relays wasn't a bad job at all. Believe me, girl, there'll be junk filling all the space between here and Saturn when we touch them off!"

"Wonderful, Steve!" Nadia exclaimed. "It won't be so bad seeing you go into the others, now that you have this one all rigged up."

AROUND and around the mass of wreckage they crept, and in each of the larger sections Stevens connected up the enormous fixed or dirigible projectors to whatever accumulator cells were available through sensitive relays, all of which he could close by means of one radio impulse. The long and dangerous task done, he stood at the lookout plate, studying the huge disk which had been the upper portion of the lower half of the *Arcturus* and frowning in thought. Nadia reached over his shoulder and switched off the plate.

"Nix on that second job, big fellow!" she declared. "They aren't really necessary, and you're altogether too apt to be killed trying to get them. It's too ghastly—I won't stand for your trying it, so that ends it."

"We ought to have them, really," he protested. "With those special tools, cutting torches, and all the stuff, we'd be sitting pretty. We'll lose weeks of time by not having them."

"We'll just have to lose it, then. You can't get 'em, any more than a baby can get the moon, so stop crying about it," she went over the familiar argument for the twentieth time. "That stuff up there is all grinding together like cakes of ice in a floe; the particular section you want is in plain sight of whoever is on watch; and those tools and things are altogether too heavy to handle. You're a husky brute, I know, but even you couldn't begin to handle them, even if you had good going. I couldn't help you very much, even if you'd let me try; and the fact that you so positively refuse to let me come along shows how dangerous you know the attempt is bound to be. You'd probably never even get up there alive, to say nothing of getting back here. No, Steve, that's out like a light."

"I sure wish they'd left us weightless for a while, sometime, if only for an hour or two," he mourned.

"But they didn't!" she retorted, practically. "So we're just out of luck to that extent. Our time is about up, too. It's time you worked us back to the tail end of this procession—or rather, the head end, since we're traveling 'down' now."

Stevens took the controls and slowly worked along the outer edge of the mass, down toward its extremity. Nadia put one hand upon his shoulder and he glanced around.

"Thanks, Steve. We have a perfectly wonderful chance as it is, and we've gone so far with our scheme together that it would be a crying shame not to be able to go through with it. I'd hate like sin to have to surrender to them now, and that's all I could do if anything should become of you. Besides. . . ." her voice died away into silence.

"Sure, you're right," he hastily replied, dodging the implication of that unfinished sentence. "I couldn't figure out anything that looked particularly feasible anyway—that's why I didn't try it. We'll pass it up."

Soon they arrived at their objective and maintained a position well in the van, but not sufficiently far ahead of the rest to call forth a restraining ray from their captors. Already strongly affected by the gravitational pull of the mass of the satellite, many of the smaller portions of the wreck, not directly held by the tractors, began to separate from the main mass. As each bit left its place another beam leaped out, until it became apparent that no more were available, and Stevens strapped the girl and himself down before two lookout plates.

"Now for it, Nadia!" he exclaimed, and simultaneously threw on the power of his own projectors and sent out the radio impulse which closed the relays he had so carefully set. They were thrown against the restraining straps savagely and held there by an enormous weight as the gigantic dirigible projectors shot their fragment of the wreck away from the comparatively slight force which had been acting upon it, but they braced themselves and strained their muscles in order to watch what was happening. As the relays in the various fragments closed, the massed power of the accumulators was shorted dead across the converters and projectors instead of being fed into them gradually through the controls of the pilot, with a result comparable to that of the explosion of an ammunition dump. Most of the masses, whose projectors were fed by comparatively few accumulator cells, darted away entirely with a stupendous acceleration. A few of them, however, received the unimpeded flow of complete batteries. Those projectors tore loose from even their massive supports and crashed through anything opposing them like a huge, armor-piercing projectile. It was a spectacle to stagger the imagination, and Stevens grinned as he turned to the girl, who was staring in wide-eyed amazement.

"Well, ace, I think they're busy enough now so that it'll be safe to take that long-wanted look at their controls," and he flashed the twin beams of his lookout light out beyond the upper half of the *Arcturus*—only to see them stop abruptly in mid-space. Even the extremely short carrier-wave of Roeser's rays could not go through the invisible barrier thrown out by the tiny, but powerful globe of space.

"No penetration?" Nadia asked.

"Flattened them out cold. 'However,' as the fox once remarked about the grapes, 'I'll bet they're sour, anyway.' We'll have some stuff of our own, one of these days. I sure hope the fireworks we started back there keep those bird amused until we get out of sight, because if I use much more power on these projectors we may not have juice enough left to stop with."

"You're using enough now to suit me—I'm so heavy I can hardly lift a finger!"

"You'd better lift 'em! You must watch what's going on back there while I navigate around this moon."

"All x, chief. . . . They've got their hands full, apparently. Those rays are shooting around all over the sky. It looks as though they were trying to capture four or five things at once with each one."

"Good! Tell me when the moon cuts them off."

AT the awful acceleration they were using, which constantly increased the terrific velocity with which they had been traveling when they made good their escape, it was not long until they had placed the satellite between them and the enemy; then Stevens cut down and reversed his power. Such was their speed, however, that a long detour was necessary in order to reduce it to a safe landing rate. As soon as this could be done, Stevens headed for the morning zone and dropped the "Hope" rapidly toward the surface of that new, strange world. Details could not be distinguished at first because of an all-enshrouding layer of cloud, but the rising sun dispelled the mist, and when they had descended to within a few thousand feet of the surface, their vision was unobstructed. Immediately below them the terrain was mountainous and heavily wooded; while far to the east the rays of a small, pale sun glinted upon a vast body of water. No signs of habitation were visible as far as the eye could reach.

"Now to pick out a location for our power-plant. We must have a waterfall for power, a good place to hide our ship from observation, and I'd like to have a little seam of coal. We can use wood if we have to, but I think we can find some coal. This is all sedimentary rock—it looks a lot like the country along the North Fork of the Flathead, in Montana. There are a lot of coal outcrops, usually, in such topography as this is."

"We want to hide in a hurry, though, don't we?"

"Not particularly, I think. If they had missed us at all, they would have had us long ago, and with all the damage we did with those projectors they won't be surprised at one piece being missing—I imagine they lost a good many."

"But they'll know that somebody caused all that disturbance. Won't they hunt for us?"

"Maybe, and maybe not—no telling what they'll do. However, by the time they can land and get checked up and ready to hunt for us, we'll be a mighty small needle, well hidden in a good big haystack."

For several hours they roamed over the mountainous region at high velocity, seeking the best possible location, and finally they found one that was almost ideal—a narrow canyon overhung with heavy trees, opening into a wide, deep gorge upon a level with its floor. A mighty waterfall cascaded into the gorge just above the canyon, and here and there could be seen black outcrops which Stevens, after a close scrutiny, declared to be coal. He deftly guided their cumbersome wedge of steel into the retreat, allowed it to settle gently to the ground, and shut off the power.

"Well, little fellow-conspirator against the peace and dignity of the Jovians, I don't know just where we are, but wherever it is, we're here. We got away clean, and as long as we don't use any high-tension stuff or anything else that they can trace, I think we're as safe as money in a bank."

"I suppose that I ought to be scared to death, Steve, but I'm not—I'm just too thrilled for words," Nadia answered, and the eager sparkle in her eyes bore out her words. "Can we go out now? How about air? Shall we wear suits or go out as we are? Have you got a weapon of any kind? Hurry up—let's do something!"

"Pipe down, ace! Remember that we don't know any more about anything around here than a pig does about Sunday, and conduct yourself accordingly. Take it easy. I'm surprised at the gravity here. This is certainly Ganymede, and it has a diameter of only about fifty seven hundred kilometers. If I remember correctly, Damoiseau estimated its mass at about three one-hundredths that of the Earth, which would make its surface gravity about one-sixth. However, it is actually almost a half, as you see by this spring-balance here. Therefore it is quite a little more massive than has been. . . ."

"What of it? Let's go places and do things!"

"Calm yourself, Ginger, you've got lots of time—we'll be here for quite a while, I'm afraid. We can't go out until we analyze the air—we're sure lucky there's as much as there is. I'm not exactly the world's foremost chemist, but fortunately an air-analysis isn't much of a job with the apparatus we carry."

While Nadia controlled her impatience as best she could, Stevens manipulated the bulbs and pipettes of the gas apparatus.

"Pressure, fifty-two centimeters—more than I dared hope for—and analysis all x, I believe. Oxygen concentration a little high, but not much."

"We won't have to wear the space-suits, then?"

"Not unless I missed something in the analysis. The pressure corresponds to our own at a height of about three thousand meters, which we can get used to without too much trouble. Good thing, too. I brought along all the air I could get hold of, but as I told you back there, if we had to depend on it altogether, we might be out of luck. I'm going to pump some of our air back into a cylinder to equalize our pressure—don't want to waste any of it until we're sure the outside air suits us without treatment."

WHEN the pressure inside had been gradually reduced to that outside and they had become accustomed to breathing the rarefied medium, Stevens opened the airlock and the outside doors, and for some time cautiously sniffed the atmosphere of the satellite. He could detect nothing harmful or unusual in it—it was apparently the same as earthly air—and he became jubilant.

"All x, Nadia—luck is perched right on our banner. Freedom, air, water, power, and coal! Now as you suggested, we'll go places and do things!"

"Suppose it's safe?" Her first eagerness to explore their surroundings had abated noticeably. "You aren't armed, are you?"

"No, and I don't believe that there was a gun of any kind aboard the *Arcturus*. That kind of thing went out quite a while ago, you know. We'll take a look, anyway—we've got to find out about that coal before we decide to settle down here. Remember this half-gravity stuff, and control your leg-muscles accordingly."

Leaping lightly to the ground, they saw that the severed section of fifty-inch armor, which was the rim of their conveyance, almost blocked the entrance to the narrow canyon which they had selected for their retreat. Upon one side that wall of steel actually touched the almost perpendicular wall or rock; upon the other side there was left only a narrow passage. They stepped through it, so that they could see the waterfall and the gorge, and stopped silent. The sun, now fairly high, was in no sense the familiar orb of day, but was a pale, insipid thing, only one-fifth the diameter of the sun to which they were accustomed, and which could almost be studied with the unshielded eye. From their feet a grassy meadow a few hundred feet wide sloped gently down to the river, from whose farther bank a precipice sprang upward for perhaps a thousand feet—merging into towering hills whose rugged grandeur was reminiscent of the topography of the moon. At their backs the wall of the gorge was steep, but not precipitous, and was covered with shrubs and trees—some of which leaned out over the little canyon, completely screening it, and among whose branches birds could now and then be seen flitting about. In that direction no mountains were visible, indicating that upon their side of the river there was an upland plateau or bench. To their right the river, the gorge, and the strip of meadow extended for a mile or more, then curved away and were lost to sight. To their left, almost too close for comfort, was the stupendous cataract, towering above them to a terror-inspiring height. Nadia studied it with awe, which changed to puzzled wonder.

"What's the matter with it, Steve? It looks like a picture in slow motion, like the kind they take of your dives—or am I seeing things?"

"No, it's really slow, compared to what we're used to. Remember that one-half gravity stuff!"

"Oh, that's right, but it certainly does look funny. It gives me the creeps."

"You'll get used to it pretty quick—just as you'll get used to all the rest of the things having only half their

earthly weight and falling only half as fast as they ought to when you drop them. Well, I don't see anything that looks dangerous yet—let's go up toward the falls a few meters and prospect that outcrop."

With a few brisk strokes of an improvised shovel he cleared the outcrop of detritus and broke off several samples of the black substance, with which they went back to the "Forlorn Hope."

"It's real coal," Stevens announced after a series of tests. "I've seen better, but on the other hand, there's lots worse. It'll make good gas, and a kind of a coke. Not so hot, but it'll do. Now we'd better get organized old partner, for a long campaign."

"Go ahead and organize—I'm only the cheap help in this enterprise."

"Cheap help! You're apt to be the life of the party. Can you make and shoot a bow and arrow?"

"I'll say I can—I've belonged to an archery club for five years."

"What did I tell you? You're a life saver! Here's the dope—we've got to save our own supplies as much as possible until we know exactly what we're up against, and to do that, we've got to live off the country. I'll fake up something to knock over some of those birds and small game, then we can make real bow-strings and feathered arrows and I'll forge some steel arrowheads while you're making yourself a real bow. We'd better make me about a hundred-pound war bow, too. . . ."

"A *hundred!*" interrupted Nadia. "That's a lot of bow, big boy—think you can bend it?"

"You'd be surprised," he grinned. "I'm not quite like Robin Hood—I've been known to miss a finger-thick wand at a hundred paces—but I'm not exactly a beginner."

"Oh, of course—I should have known by your language that you're an archer, otherwise you'd never have used such an old-fashioned word as 'pounds.' I shoot a thirty-five-pound bow ordinarily, but for game I should have the heaviest one I can hold accurately—about a forty-five, probably."

"All x. And as soon as I can I'll make us a couple of suits of fairly heavy steel armor, so that we'll have real protection if we should need it. You see, we don't know what we are apt to run up against out here. Then, with that much done, it'll be up to you to provide, since I'll have to work tooth and nail at the forges. You'll have to bring home the bacon, do the cooking and so on, and see what you can find along the line of edible roots, grains, fruits, and what-not. Sort of reverse the Indian idea—you be the hunter and I'll keep the home fires burning. Can do?"

"What it takes to do that, I've got," Nadia assured him, her eyes sparkling. "Have you your job planned out as well and as fittingly as you have mine?"

"And then some. We've got just two methods of getting away from here—one is to get in touch with Brandon, so that he'll come after us; the other is to recharge our accumulators and try to make it under our own power. Either course will need power, and lots of it. . . ."

"I never thought of going back in the 'Hope.' Suppose we could?"

"About as doubtful as the radio—I think that I could build a pair of matched-frequency auto-dirigible transmitter and receptor units, such as are necessary for space-ships fed by stationary power-plants, but after I got them built, they'd take us less than half way there. Then we'd have only what power we can carry, and I hate even to think of what probably would happen to us. We'd certainly have to drift for months before we could get close enough to any of our plants to radio for help, and we'd be taking awful chances. You see, we'd have to take a very peculiar orbit, and if we should miss connections passing the inner planets, what the sun would do to us at the closest point and where what's left of us would go on the back-swing, would be just too bad! Beides, if we can get hold of the *Sirius*, they'll come loaded for bear, and we may be able to do something about the rest of the folks out here."

"OH!" breathed the girl. "Wouldn't it be wonderful if we could! I thought, of course, they'd all be. . . ." her voice died away.

"Not necessarily—there's always a chance. That's why I'm trying the ultra-radio first. However, either course will take lots of power, so the first thing I've got to do is to build a power plant. I'm going to run a penstock up those falls, and put in a turbine, driving a high-tension alternator. Then, while I'm trying to build the ultra-radio, I'll be charging our accumulators, so that no time will be lost in case the radio fails. If it does fail—and remember I'm not counting on its working—of course I'll tackle the transmission and receptor units before we start out to drift it."

"You say it easy, Steve, but how can you build all those things, with nothing to work with?"

"It's going to be a real job—I'll not try to kid you into thinking it'll be either easy or quick. Here's the way everything will go. Before I can even lay the first length of the penstock, I've got to have the pipe—to make which I've got to have flat steel—to get which I'll have to cut some of the partitions out of this ship of ours—to do which I'll have to have a cutting torch—to make which I'll have to forge nozzles out of block metal and to run which I'll have to have gas—to get which I'll have to mine coal and build a gas-plant—to do which. . . ."

"Good heavens, Steve, are you going back to the Stone Age? I never thought of half those things. Why, it's impossible!"

"Not quite, guy. Things could be a lot worse—that's why I brought along the whole 'Forlorn Hope,' instead of just the lifeboat. As it is, we've got several thousand tons of spare steel and lots of copper. We've got ordinary tools and a few light motors, blowers, and such stuff. That gives me a great big start—I won't have to mine the ores and smelt the metals, as would have been necessary otherwise. However, it'll be plenty bad. I'll have to start out in a pretty crude fashion, and for some of the stuff I'll need I'll have to make, not only the machine that makes the part I want, but also the machine that makes the machine that makes the machine that makes it—and so on, just how far down the line, I haven't dared to think."

"You must be a regular jack-of-all-trades, to think you can get away with such a program as that?"

"I am—nothing else but. You see, while most of my school training was in advanced physics and mathematics, I worked my way through by computing and designing, and I've done a lot of truck-horse labor of various kinds besides. I can calculate and design almost anything, and I can make a pretty good stab at

translating a design into fabricated material. I wouldn't wonder if Brandon's ultra-radio would stop me, since nobody had even started to build one when I saw him last—but I helped compute it, know the forces involved as well as he did at that time, and it so happens that I know more about the design of coils and fields of force than I do about anything else. So I may be able to work it out eventually. It isn't going to be not knowing how that will hold me up—it'll be the lack of something that I can't build."

"And that's where you will go back and back and back, as you said about building the penstock?"

"Back and back is right, if I can find all the necessary raw materials—that's what's probably going to put a lot of monkey-wrenches into the machinery." And Stevens went to work upon a weapon of offense, fashioning a crude, but powerful bow from a strip of spring steel strung with heavy wire.

"How about arrows? Shall I go see if I can hit a bird with a rock, for feathers, and see if I can find something to make arrows out of?"

"Not yet—anyway, I'd bet on the birds! I'm going to use pieces of this light brace-rod off the accumulator cells for arrows. They won't fly true, of course, but with their mass I can give them enough projectile force to kill any small animal they hit, no matter how they hit it."

After many misses, he finally bagged a small animal, something like a rabbit and something like a kangaroo, and a couple of round-bodied, plump birds, almost as large as domestic hens. These they dressed, with considerable distaste and a noticeable lack of skill.

"We'll get used to it pretty quick, Diana—also more expert," he said when the task was done. "We now have raw material for bowstrings and clothes, as well as food."

"The word 'raw' being heavily accented," Nadia declared, with a grimace. "But how do we know that they're good to eat?"

"We'll have to eat 'em and see," he grinned. "I don't imagine that any flesh is really poisonous, and we'll have to arrive at the ones we like best by a process of trial and error. Well, here's your job—I'll get busy on mine. Don't go more than a few hundred meters away and yell if you get into a jam."

"There's a couple of questions I want to ask you. What makes it so warm here, when the sun's so far away and Jupiter isn't supposed to be radiating any heat? And how about time? It's twelve hours by my watch since sunrise this morning, and it's still shining."

"As for heat, I've been wondering about that. It must be due to internal heat, because even though Jupiter may be warm, or even hot, it certainly isn't radiating much, since it has a temperature of minus two hundred at the visible surface, which, of course, is the top of the atmosphere. Our heat here is probably caused by radioactivity—that's the most modern dope, I believe. As for time, it looks as though our days were something better than thirty hours long, instead of twenty-four. Of course I'll keep the chronometer going on I-P time, since we'll probably need it in working out observations; but we might as well let our watches run down and work, eat, and sleep by the sun—not much sense in trying to keep Tellurian time here, as I see it. Check?"

"All x. I'll have supper ready for you at sunset. 'Bye!"

A few evenings later, when Stevens came in after his long day's work, he was surprised to see Nadia dressed in a suit of brown coveralls and high-laced moccasins.

"How do I look?" she asked, pirouetting gayly.

"Neat, but not gaudy," he approved. "That's good mole-skin—smooth, soft, and tough. Where'd you make the raise? I didn't know we had anything like that on board. What did you do for thread? You look like a million dollars—you sure did a good job of fitting."

"I had to have something—what with all the thorns and brush, there was almost more of me exposed than covered, and I was getting scratched up something fierce. So I ripped up one of the space-suits, and found out that there's enough cloth, fur, and leather in one of them to make six ordinary suits, and thread by the kilometer. I was awfully glad to see all that thread—I had an idea that I'd have to unravel my stockings or something, but I didn't. Your clothes are getting pretty tacky, too, and you're getting all burned with those hot coals and things. I'm going to build you a suit out of leather for your blacksmithing activities."

"Fine business, ace! Then we can save what's left of our civilized clothes for the return trip. What do we eat?"

"The eternal question of the hungry laboring man! I've got a roasted bongo, a fried filamaloo bird, and a boiled warple for the meat dishes. For vegetables, mashed hikoderms and pimola greens. Neocorn bread."

"Translate that, please, into terms of food."

"Translate it yourself, after you eat it. I changed the system on you today. I've named all the things, so it'll be easier to keep track of those we like and the ones we don't."

With appetites sharp-set by long hours of hard labor they ate heartily; then, in the deepening twilight, they sat and talked in comradely fashion while Stevens smoked one precious cigarette.

IT was not long until Nadia had her work well in hand. Game was plentiful, and the fertile valley and the neighboring upland yielded peculiar, but savory vegetable foods in variety and abundance; so that soon she was able to spend some time with Stevens, helping him as much as she could. Thus she came to realize the true magnitude of the task he faced and the real seriousness of their position.

As Stevens had admitted before the work was started, he had known that he had set himself a gigantic task, but he had not permitted himself to follow, step by step, the difficulties that he knew awaited him. Now, as the days stretched into weeks and on into months, he was forced to take every laborious step, and it was borne in upon him just how nearly impossible that Herculean labor was to prove—just how dependent any given earthly activity is upon a vast number of others. Here he was alone—everything he needed must be manufactured by his own hands, from its original sources. He had known that progress would be slow and he had been prepared for that; but he had not pictured, even to himself, half of the maddening setbacks which occurred time after time because of the crudity of the tools and equipment he was forced to use. All too often a machine or part, the product of many hours of grueling labor, would fail because of the lack of some insignificant thing—some item so common as to be taken for granted in all terrestrial shops, but impossible of fabrication with the means

at his disposal. At such times he would set his grim jaw a trifle harder, go back one step farther toward the Stone Age, and begin all over again—to find the necessary raw material or a possible substitute, and then to build the apparatus and machinery necessary to produce the part he required. Thus the heart-breaking task progressed, and Nadia watched her co-laborer become leaner and harder and more desperate day by day, unable in any way to lighten his fearful load.

In the brief period of rest following a noonday meal, Stevens lay prone upon the warm, fragrant grass beside the "Forlorn Hope," but it was evident to Nadia that he was not resting. His burned and blistered hands were locked savagely behind his head, his eyes were closed too tightly, and every tense line of his body was eloquent of a strain even more mental than physical. She studied him for minutes, her fine eyes clouded, then sat down beside him and put her hand upon his shoulder.

"I want to talk to you a minute, Steve," she said gently.

"All x, little fellow—but it might be just as well if you didn't touch me. You see, I'm getting so rabid that I can't trust myself."

"That's exactly what I want to talk to you about." A fiery blush burned through her deep tan, but her low, clear voice did not falter and her eyes held his unflinchingly. "I know you better than you know yourself, as I've said before. You are killing yourself, but it isn't the work, frightfully hard and disheartening as it is, that is doing it—it's your anxiety for me and the uncertainty of everything. You haven't been able to rest because you have been raging and fuming so at unavoidable conditions—you have been fighting *facts*. And it's all *so* useless, Steve, between you and me—everything would check out on zero if we'd just come out into the open."

The man's gaunt frame seemed to stiffen even more rigidily.

"You've said altogether too much or else only half enough, Nadia. You know, of course, that I've loved you ever since I got really to know you—and that didn't take long. You know that I love you and you know how I love you—with the real love that a man can feel for only one woman and only once in his life; and you know exactly what we're up against. Now that *does* tear it—wide open!" he finished bitterly.

"No, it doesn't, at all," she replied, steadily. "Of course I know that you love me, and I glory in it; and since you don't seem to realize that I love you in exactly the same way, I'll tell you so. Love you! Good heavens, Steve, I never dreamed that such a man as you are really existed! But you're fighting too many things at once, and they're killing you. And they're mostly imaginary, at that. Can't you see that there's no need of uncertainty between you and me? That there is no need of you driving yourself to desperation on my account? Whatever must be is all x with me, Steve. If you can build everything you need, all well and good. We'll be engaged until then, and our love will be open and sweet. If worst comes to worst, so that we can neither communicate with Brandon and Westfall nor leave here under our own power—even that is nothing to kill ourselves about. And yes, I do know exactly what we are facing. I have been prepared for it ever since I first saw what a perfectly impossible thing you are attempting. You are trying to go from almost the Age of Bronze clear up to year-after-next in a month or two. Not one man in a million could have done as much in his lifetime as you have done in the last few weeks, and I do not see how even you, with what little you have to work with, can possibly build such things as power-plants, transmitters, and ultra-radio stations. But what of it? For the day that it becomes clear that we are to remain here indefinitely; that day we will marry each other here, before God. Look around at this beautiful country. Could there be a finer world upon which to found a new race? When we decided to cut loose from the *Arcturus* I told you that I was with you all the way, and now I'll repeat it, with a lot more meaning. No matter what it's like, Steve, no matter where it leads to, I'm with you—*to—the—end—of—the—road*. Here or upon Earth or anywhere in the Universe, I am yours for life and for eternity."

WHILE she was speaking, the grim, strained lines upon Stevens' face had disappeared, and as she fell silent he straightened up and gently, tenderly, reverently he took her lithe body into his arms.

"You're right, sweetheart—everything *will* check out on zero, to nineteen decimals." He was a man transfigured. "I've been fighting windmills and I've been scared sick—but how was I to think that a wonder-girl like you could ever love a mutt like me? You certainly are the gamest little partner a man ever had. You're the world's straightest shooter, ace—you're a square brick if there ever was one. Your sheer nerve in being willing to go the whole route makes me love you more than ever, if such a thing can be possible, and it certainly puts a new face on the whole cock-eyed Universe for me. However, I don't believe it will come to that. After what you've just said, I sure will lick that job, regardless of how many different factories it takes to make one armature—I'll show that mess of scrap-iron what kind of trees make shingles!"

The girl still in his arms, he rose to his feet and released her slowly, reluctantly, unwilling ever to let her go. Then he shook himself, as though an overwhelming burden had been lifted from his shoulders, and laughed happily.

"See this cigarette?" he went on lightly. "The Last of the Mohicans. I'm going to smoke it in honor of our engagement." He drew the fragrant smoke deep into his lungs and frowned at her in mock seriousness.

"This would be a nice world to live on, of course, but the jobs here are too darn steady. It also seems to be somewhat lacking in modern conveniences, such as steel-mills and machine tools. Then, too, it is just a trifle too far from the Royal and Ancient for you really to enjoy living here permanently, and besides, I can't get my favorite brand of cigarettes around here. Therefore, after due deliberation, I don't believe we'll take the place—we'll go back to Tellus. Kiss me just once more ace, and I'll make that job think a cyclone has struck it right on the center of impact. Like Samuel Weller, or whoever it was, I'm clear full of 'wigor, wim, and witality'!"

The specified kiss and several others duly delivered he strode blithely away, and the little canyon resounded with the blows of his heavy sledge as he attacked with renewed spirit the great forging, white-hot from his soak-pit, which was to become the shaft of his turbo-al-

ternator. Nadia watched him for a moment, her very heart in her eyes, then picked up her spanner and went after more steel, breathing a long and tremulous, but supremely happy sigh.

CHAPTER IV

Ganymedean Life

SLOW, hard, and disheartening as the work had been at first, Stevens had never slackened his pace, and after a time, as his facilities increased, the exasperating setbacks decreased in number and severity and his progress became faster and faster. Large as the "Forlorn Hope" was, space was soon at a premium, for their peculiarly-shaped craft became a veritable factory, housing a variety of machinery and equipment unknown in any single earthly industrial plant. Nothing was ornamental—everything was stripped to its barest fundamental necessities—but every working part functioned with a smooth precision to delight the senses of any good mechanic.

In a cavern under the falls was the great turbine, to be full-fed by the crude but tight penstock which clung to the wall of the gorge, angling up to the brink of that stupendous cataract. Bedded down upon solid rock there was a high-tension alternator capable of absorbing the entire output of the mighty turbine. This turbo-alternator was connected to a set of converters from which the energy would flow along three great copper cables—the receptors of the lifeboats being altogether too small to carry the load—to the now completely exhausted accumulators of the "Forlorn Hope." All high-tension apparatus was shielded and grounded, so that no stray impulses could reveal to the possible detectors of the Jovians the presence of this foreign power plant. Housings, frames, spiders, all stationary parts were rough, crude and massive; but bearings, shafts, armatures, all moving parts, were of a polished and finished accuracy and balance that promised months and years of trouble-free operation. Everything ready for the test, Stevens took off his frayed and torn leather coveralls and moccasins and climbed nimbly up the penstock. He never walked down. Opening the head-gate, he poised sharply upon its extremity and took off in a perfect swan-dive; floating unconcernedly down toward that boiling maelstrom two hundred feet below. He struck the water with a sharp, smooth "slup!" and raced ashore, seizing his suit as he ran toward the turbo-alternator. It was running smoothly, and, knowing that everything was tight at the receiving end, he lingered about the power plant until he was assured that nothing would go wrong and that his home manufactured lubricating oil and grease would keep those massive bearings cool.

Hunger assailed him, and glancing at the sun, he noted that it was well past dinner-time.

"Wow!" he exclaimed aloud. "The boss just loves to wait meals—she'll burn me up for this!"

He ran lightly toward "home," eager to tell his sweetheart that the long awaited moment had arrived—that power was now flowing into their accumulators.

"Hi, Diana of the silver bow!" he called. "How come you no blow the dinner bell? Power's on—come give it a look!"

There was no answer to his hail, and Stevens paused in shocked amazement. He knew that never of her own volition would she be out so late—Nadia was gone! A rapid tour of inspection quickly confirmed that which he already knew only too well. Forgotten was his hunger, forgotten the power plant, forgotten everything except the fact that his Nadia, the bouyant spirit in whom centered his Universe, was lost or . . . he could not complete the thought, even to himself.

Swiftly he came to a decision and threw off his suit, revealing the body of a Hercules—a body ready for any demand he could put upon it. Always in hard training, months of grinding physical labor and of heavy eating had built him up to a point at which he would scarcely have recognized himself, could he have glanced into a mirror. Mighty but pliable muscles writhed and swelled under his clear skin as he darted here and there, selecting equipment for what lay ahead of him. He donned the heavily armored space-suit which they had prepared months before, while they were still suspicious of possible attack. It was covered with heavy steel at every point, and the lenses of the helmet, already of unbreakable glass, had been re-enforced with thick steel bars. Tank and valves supplied air at normal pressure, so that his powerful body could function at full efficiency, not handicapped by the lighter atmosphere of Ganymede. The sleeves terminated in steel-protected rubber wristlets which left his hands free, yet sheltered from attack—wristlets tight enough to maintain the difference in pressure, yet not tight enough to cut off the circulation. He took up his mighty war-bow and the full quiver of heavy arrows—full-feathered and pointed with savagely barbed, tearing heads of forged steel—and slipped into their sheaths the long and heavy razor-sharp sword and the double-edged dirk, which he had made and ground long since for he knew not what emergency, and whose bell-shaped hilts of steel further protected his hands and wrists. Thus equipped, he had approximately his normal earthly weight; a fact which would operate to his advantage, rather than otherwise, in case of possible combat. With one last look around the "Forlorn Hope," whose every fitting spoke to him of the beloved mistress who was gone, he filled a container with water and cooked food and opened the door.

"IT won't be long now; now it won't be long," Naida caroled happily, buckling on her pack straps and taking up bow and arrows for her daily hunt. "I never thought that he could do it, but what it takes to do things, he's got lots of," she continued to improvise the song as she left the "Hope" with its multitudinous devices whose very variety was a never-failing delight to her; showing as it did the sheer ability of the man, whose brain and hands had almost finished a next-to-impossible task.

Through the canyon and up a well-worn trail she climbed, and soon came out upon the sparsely timbered bench that was her hunting grounds. Upon this day, however, she was full of happy anticipation and her mind was everywhere except upon her work. She was thinking of Stevens, of their love, of the power which he might turn on that very day, and of the possible rescue for which she had hitherto scarcely dared to hope. Thus it was that she walked miles beyond her usual limits without having loosed an arrow, and she was surprised when she glanced up at the sun to see that half the morning was gone and that she was almost to the foothills, beyond which rose a towering range of mountains.

"Snap out of it, girl!" she reprimanded herself. "Go on wool-gathering like this and your man will go hungry —and he'll break you right off at the ankles!" She became again the huntress, and soon saw an animal browsing steadily along the base of a hill. It was a six-legged, deer-like creature, much larger than anything she had as yet seen. But it was meat and her time was short, therefore she crept within range and loosed an arrow with the full power of her hunting bow. Unfamiliar as she was with the anatomy of the peculiar creature, the arrow did not kill. The "hexaped," as she instantly named it, sped away and she leaped after it. She, like her companion, had developed amazingly in musculature, and few indeed were the denizens of Ganymede, who could equal her speed upon that small globe, with its feeble gravitational force.

Up the foothills it darted. Beyond the hills and deep into a valley between two towering peaks the chase continued before Nadia's third arrow brought the animal down. Bending over the game, she became conscious of a strange but wonderful sweet perfume and glanced up, to see something which she certainly had not noticed when the hexaped had fallen. It was an enormous flower, at least a foot in diameter and indescribably beautiful in its crimson and golden splendor. Almost level with her head the gorgeous blossom waved upon its heavy stem; based by a massive cluster of enormous, smooth, dark green leaves. Entranced by this unexpected and marvelous floral display, Nadia breathed deeply of the inviting fragrance—and collapsed senseless upon the ground. Thereupon the weird plant moved over toward her, and the thick leaves began to enfold her knees. This carnivorous thing, however, did not like the heavy cloth of her suit and turned to the hexaped. It thrust several of its leaves into the wounds upon the carcass and fed, while two other leaves rasped together, sending out a piercing call.

In answer to the sound the underbrush crackled, and through it and upon the scene there crashed a vegetable-animal nightmare—the parent of the relatively tiny thing whose perfume had disabled the girl.

Its huge and gorgeous blossom was supported by a long, flexible, writhing stem, and its base was composed of many and highly specialized leaves. There were saws and spears and mighty, but sinuous tendrils; there were slender shoots which seemed to possess some sense of perception; there was the massive tractor base composed of extensible leaves which by their contraction and expansion propelled the mass along the ground. Parent and child fell upon the hexaped, and soon bones and hair were all that remained. The slender shoots then wandered about the unconscious girl in her strange covering, and as a couple of powerful tendrils coiled about her and raised her into the air over the monstrous base of the thing, its rudimentary brain could almost be perceived working as it sluggishly realized that, now full fed, it should carry this other victim along, to feed its other offspring when they should return to its side.

BARELY outside the door of the "Forlorn Hope" Stevens whirled about with a bitter imprecation. He had already lost time needlessly—with a lookout plate he could cover more ground in ten minutes than he could cover afoot in a week. He flipped on the power and shot the violet beam out over the pleateau to the district where he knew Nadia was wont to hunt. Not finding her there, he swung the beam in an ever widening circle around that district. Finally he saw a few freshly broken twigs, and scanned the scene with care. He soon found the trail of fresh blood which marked the path of the flight of the hexaped, and with the peculiar maneuverability of the device he was using, it was not long until he was studying the scene where the encounter had taken place. He gasped when he saw the bones and perceived three of Nadia's arrows, but soon saw that the skeleton was not human and was reassured. Casting about in every direction, he found Nadia's bow, and saw a peculiar, freshly trampled path leading from the kill, past the bow, down the valley. He could not understand the spoor, but it was easily followed, and he shot the beam along it at headlong speed until he came up with the monstrous creature that was making it—until he saw what burden that organism was carrying.

He leaped to the controls of the lifeboat, then dropped his hand. While the stream of power now flowing was ample to operate the lookout plates, yet it would be many hours before the accumulator cells would be in condition to drive the craft even that short distance.

"It'll take over an hour to get there—here's hoping I can check in all x," he muttered savagely, as he took careful note of the location and direction of the creature's trail and set off at a fast jog-trot.

The carnivorous flower's first warning that all was not well was received when Stevens' steel-shod feet landed squarely upon its base and one sweeping cut of his sword loppd off the malignant blossom and severed the two tendrils that still held the unconscious Nadia. With a quick heave of his shoulder, he tossed her lightly backward into the smooth-beaten track the creature had made and tried to leap away—but the instant he had consumed in rescuing the girl had been enough for the thing to seize him, and he found himself battling for his very life. No soft-leaved infant this, but a full-grown monster, well equipped with mighty weapons of offense and defense. Well it was for the struggling man that he was encased in armor steel as those saw-edged, hard-spiked leaves drove against him with crushing force; well it was for him that he had his own independent air supply, so that that deadly perfume eddied ineffective about his helmeted head! Hard and fiercely driven as those terrible thorns were, they could do no more than dent his heavy armor. His powerful left arm, driving the double-razor-edged dirk in short, resistless arcs, managed to keep the snaky tendrils from coiling about his right arm, which was wielding the heavy, trenchant sword. Every time that mighty blade descended it cleaved its length through snapping spikes and impotently grinding leaves; but more than once a flailing tendril coiled about his neck armor and held his helmet immovable as though in a vise, while those frightful, grinding saws sought to rip their way through the glass to the living creature inside the peculiar metal housing. Dirk and saber and magnificent physique finally triumphed, but it was not until each leaf was literally severed from every other leaf that the outlandish organism gave up the ghost.

NADIA had been tossed out into pure air, beyond the zone of the stupefying perfume, and she recovered her senses in time to see the finish of the battle. Stevens, assured that his foe was *hors du combat*, turned toward the spot where he had thrown Nadia's

body. He saw that she was unharmed, and sprang toward her in relief. He was surprised beyond measure, however, to see her run away at a pace he could not hope to equal, encumbered as he was; motioning frantically at him the while to keep away from her. He stopped, astounded, and started to unscrew his helmet, whereupon she dashed back toward him, signaling him emphatically to leave his armor exactly as it was. He stood still and stared at her, an exasperated question large upon his face, until she made clear to him that he was to follow her at a safe distance, then she set off at a rapid walk. She led him back to where the hexaped had fallen, where she retrieved her bow and arrows; then, keeping a sharp lookout upon all sides, she went on to a small stream of water. She made the dumb-founded man go out into the middle of the creek and lie down and roll over in the water, approaching him sniffing cautiously between immersions. She made him continue the bathing until she could detect not even the slightest trace of the sweet, but noxious fragrance of that peculiarly terrible form of Ganymedean life. Only then did she allow him to remove his helmet, so that she could give him the greeting for which they both had longed and tell him what it was all about.

"So that's it, ace!" he exclaimed, still holding her tightly in his iron embrace. "Great balls of fire! I thought maybe you were still a little cuckoo. Anaesthetic perfume, huh? Hot stuff, I'd say—no wonder you bit—I would, too. It's lucky for us I was air-tight—we'd both be fee . . ."

"Stop it!" she interrupted him sharply. "Forget it—don't ever even think of it!"

"All x, ace. It's out like the well known light. What to do? It's getting darker than a hat, and we're a long way from home. Don't know whether I could find my way back in the dark or not; and just between you and me, I'm not particularly keen on night travel in these parts after what's just happened. Are you?"

"Anything else but," she assured him, fervently. "I'd lots rather stay hungry until tomorrow."

"No need of that—I've brought along enough supper for both of us. I'm hungry as a wolf, too, now that I have time to think of it. We'll eat and den up somewhere—or climb a tree. Those wampuses probably can't climb trees!"

"There's a nice little cave back there about a hundred meters. We'll pretend it's the Ritz," and they soon had a merry fire blazing in front of the retreat. There they ate of the provisions Stevens had brought. Then, while the man rolled up boulders before the narrow entrance of the cave, Nadia gathered leaves and made a soft bed upon its warm, dry floor.

"Good night, lover," and the girl, untroubled and secure now that Stevens was at her side, was almost instantly asleep; but the man was not sleepy. He thought of the power plant, even now sending its terrific stream of energy into his accumulators. He thought of the ultra-radio—where could he get all the materials needed? He thought of his friends, wondering whether or not they would receive his message. He thought of Breckenridge and the other human beings who had been aboard the *Arcturus*, wondering poignantly as to their fate. He thought of Newton and of his own people, who had certainly given them up for dead long since.

But above all he thought of the beautiful, steel-true companion lying there asleep at his mailed feet, and he gazed down at her, his heart in his eyes. The firelight shone through the chinks between the boulders, casting a flickering ruddy light throughout the little cavern. Nadia lay there her head pillowed upon one strong, brown little hand. Her lips were red and sweetly curved, her cheek was smooth and firm as so much brown velvet. She was literally aglow with sheer beauty and with perfect health; and the man reflected, as he studied her hungrily, that this wild life certainly had agreed with her—she was becoming more surpassingly beautiful with every passing day.

"You little trump—you wonderful, lovely, square little brick!" he breathed silently, and bent over to touch her cheek lightly with his lips. Slight as the caress was, it disturbed her, and even in her sleep her subconscious mind sent out an exploring hand, to touch her Steve and thus be reassured. He pressed her hand and she settled back comfortably, with a long, deep breath; and he stretched his iron-clad length beside her and closed his eyes, firmly resolved not to waste a minute of this wonderful night in sleep.

When he opened them an instant later, it was broad daylight, the boulders had been rolled away, the fragrance of roasting meat permeated the atmosphere, and Nadia was making a deafening clamor, beating his steel breastplate lustily with the flat of his huge saber.

"Daylight in the swamp, you sleeper!" she exclaimed. "Roll out or roll up! Come and get it, before I throw it away!"

"I must have been kind of tired," he said sheepishly, when he saw that she had shot a bird and had cooked breakfast for them both while he had been buried in oblivion.

"Peculiar, too, isn't it?" Nadia asked, pointedly. "You only did about ten days' work yesterday in ten minutes, swinging this frightful snickersnee of yours. Why, you played with it as though it were a knitting-needle, and when I wanted to wake you up with it, I could hardly lift it."

"Thought you didn't want that subject even mentioned?" he tried to steer the talk away from his prowess with the broadsword.

"That was yesterday," airily. "Besides, I don't mind talking about you—it's thinking about us being . . . you know . . that I can't stand."

"All x, ace. I get you—right. Let's eat."

BREAKFAST over, they started down the valley, Stevens carrying his helmet under his arm. Hardly had they started however, than Nadia's keen eyes saw a movement through the trees, and she stopped and pointed. Stevens looked once, then hand in hand they dashed back to their cave.

"We'll pile up some of the boulders and you lie low," he instructed her as he screwed on his helmet. She snapped open his face-plate.

"But what about you? Aren't you coming in, too?" she demanded.

"Can't—they'd surround us and starve us out. I'm safe in this armor—thank Heaven we made it as solid as we did—and I'll fight 'em in the open. I'll show 'em what the bear did to the buckwheat!"

"All right, I guess, but I wish I had my armor, too," she mourned as he snapped shut his plate and walled her into the cave with the same great rocks he had used the night before. Then, Nadia safe from attack, he

drew his quiver of war-arrows into position over his shoulder, placed one at the ready on his bow-string and turned to face the horde of things rushing up the valley toward him. Wild animals he had supposed them, but as he stood firm and raised his weapon shrill whistles sounded in the throng, and he gasped as he realized that those frightful creatures must be intelligent beings, for not only did they signal to each other, but he saw that they were armed with bows and arrows, spears, and slings!

Six-limbed creatures they were, of a purplish-red color, with huge, tricornigerous heads and with staring, green, phosphorescent eyes. Two of the six limbs were always legs, two always arms; the intermediate two, due to a mid-section jointing of the six-foot-long, almost cylindrical body, could be used at will as either legs or arms. Now, out of range, as they supposed, they halted and gathered about one who was apparently their leader; some standing erect and waving four hands while shaking their horns savagely in Stevens' direction, others trotting around on four legs, busily gathering stones of suitable size for their vicious slings.

Too far away to use their own weapons and facing only one small four-limbed creature, they considered their game already in the bag, but they had no comprehension of earthly muscles, nor any understanding of the power and range of a hundred-pound bow driving a steel-headed war arrow. Thus, while they were arguing, Stevens took the offensive, and a cruelly barbed steel war-head tore completely through the body of their leader and mortally wounded the creature next beyond him. Though surprised, they were not to be frightened off, but with wild, shrill screams rushed to the attack. Stevens had no ammunition to waste, and every time that mighty bow twanged a yard-long arrow transfixed at least one of the red horde—and a body through which had torn one of those ghastly, hand-forged arrow-heads was of very little use thereafter. Accurately-sped arrows splintered harmlessly against the re-enforced windows of his helmet and against the steel guards protecting his hands. He was almost deafened by the din as the stone missiles of the slingers rebounded from his reverberating shell of steel, but he fired carefully, steadily, and powerfully until his last arrow had been loosed. Then, the wicked dirk in his left hand and the long and heavy saber weaving a circular path of brilliance in the sun, he stepped forward a couple of paces to meet the attackers. For a few moments nothing could stand before that fiercely driven blade—severed heads, limbs, and fragments of torsos literally filled the air, but sheer weight of numbers bore him down. As he fell, he saw the white shaft of one of Nadia's hunting-arrows flash past his helmet and bury itself to the nock in the body of one of the horde above him. Nadia knew that her arrows could not harm her lover, and through a chink between two boulders she was shooting into the thickest of the mob speeding her light arrows with the full power of her bow.

Though down, the savages soon discovered that Stevens was not out. In such close quarters he could not use his sword, but the fourteen-inch blade of the dirk, needle-pointed as it was and with two razor-sharp, serrated cutting edges, was itself no mean weapon, and time after time he drove it deep, taking life at every thrust. Four more red monsters threw themselves upon the prostrate man, but not sufficiently versed in armor to seek out its joints, their fierce short spear thrusts did no damage. Presently four more corpses lay still and Stevens, with his, to them incredible, earthly strength, was once more upon his feet in spite of their utmost efforts to pinion his mighty limbs, and was again swinging his devastating weapon. Half their force lying upon the field, wiped out by a small, but invincible and apparently invulnerable being, the remainder broke and ran, pursued by Stevens to the point where the red monsters had first halted. He recovered his arrows and returned to the cave, opening his face-plate as he came.

"All x, sweetheart?" he asked, rolling away the boulders. "Didn't get anything through to you, did they?"

"No, they didn't even realize that I was taking part in the battle, I guess. Did they hurt you while they had you down? I was scared to death for a minute."

"No, the old armor held. One of them must have gnawed on my ankle some, between the greave and the heel-plate, but he couldn't quite get through. 'Sa darn small opening there, too—must have bent my foot 'way around to get in at all. Have to tighten that joint up a little, I guess. I'll bet I've got a black spot and blue spot there the size of my hand—maybe it's only the size of yours, though."

"You won't die of that, probably. Heavens, Steve, that cleaver of yours is a frightful thing in action! Suppose it's safe for us to go home?"

"Absolutely—right now is the best chance we'll ever have, and something tells me that we'd better make it snappy. They'll be back, and next time they won't be so easy to take."

"All x, then—hold me, Steve, I can't stand the sight of that—let alone wade through it. I'm going to faint or something, sure."

"As you were!" he snapped. "You aren't going to pass out now that it's all over! It's a pretty ghastly mess, I know, but shut your eyes and I'll carry you out of sight."

"Aren't we out of sight of that place yet?" she demanded after a time.

"Have been for quite a while," he confessed, "but you're sitting pretty, aren't you? And you aren't very heavy—not here on Ganymede, anyway!"

"PUT me down!" she commanded. "After that crack I won't play with you any more at all—I'll pick up my marbles and go home!"

He released her and they hurried back toward their waterfall, keeping wary eyes sharp-set for danger in any form, animal or vegetable. On the way back across the foothills Stevens shot another hexaped, and upon the plateau above the river Nadia bagged several birds and small animals, but it was not until they were actually in their own little canyon that their rapid pace slackened and their vigilance relaxed.

"After this, ace, we hunt together and we go back to wearing armor while we're hunting. It scared me out of a year's growth when you checked up missing."

"We sure do, Steve," she concurred emphatically. "I'm not going to get more than a meter away from you from now on. What do you suppose those horrible things are?"

"Which?"

"Both."

"Those flowers aren't like anything Tellus ever saw, so we have no basis of comparison. They may be a de-

velopment of a flycatching plant, or they may be a link between the animal and the vegetable kingdom. However, we don't intend to study 'em, so let's forget 'em. Those animals were undoubtedly intelligent beings; they probably are a race of savages of this satellite."

"Then the really civilized races are probably . . ."

"Not necessarily—there may well be different types, each struggling toward civilization. They certainly are on Venus, and they once were on Mars."

"Why haven't we see anything like that before, in all these months? Things have been so calm and peaceful that we thought we had the whole world to ourselves, as far as danger or men were concerned."

"We never saw them before because we never went where they lived—you were a long ways from your usual stamping-grounds, you know. That animal-vegetable flower is probably a high-altitude organism, living in the mountains and never coming as low as we are down here. As for the savages—whatever they are—they probably never come within five kilometers of the falls. Many primitive peoples think that waterfalls are inhabited by demons, and maybe these folks are afflicted the same way."

"We don't know much about our new world yet, do we?"

"We sure don't—and I'm not particularly keen on finding out much more about it until we get organized for trouble, either. Well, here we are—just like getting back home to see the 'Hope,' isn't it?"

"It *is* home, and will be until we get one of our own on earth," and after Stevens had read his meters, learning with satisfaction that the full current was still flowing into the accumulators, he began to cut up the meat.

"Now that you've got the power-plant running at last, what next?" asked Nadia, piling the cuts in the freezer.

"Brandon's ultra-radio comes next, but it's got more angles to it than a cubist's picture of a set of prisms; so many that I don't know where to begin. There, that job's done—let's sit down and I'll talk at you awhile. Maybe between us we can figure out where to start. I've got everything to build it lined up except for the tube, but that's got me stopped cold. You see, fields of force are all right in most places, but I've got to have one tube, and it's got to have the hardest possible vacuum. That means a mercury-vapor super-pump. Mercury is absolutely the only thing that will do the trick and the mercury is one thing that is conspicuous by its absence in these parts. So are tungsten for filaments, tantalum for plates, and platinum for leads; and I haven't found anything that I can use as a getter, either—a metal, you know, to flash inside the tube to clean up the last traces of atmosphere in it."

"I didn't suppose that such a simple thing as a radio tube could hold you up, after the perfectly unbelievable things that you have done already—but I see now how it could. Of course, the tubes in our receiver over there are too small?"

"Yes, they are only receiver and communicator tubes, and I need a high-power transmitting tube—a fifty-kilowatter, at least. I'd give my left leg to the knee joint for one of those big water-cooled, sixty-kilowatt tens-nineteens right now—it would save us a lot of grief."

"Maybe you could break up those tubes and use the plates and so on?"

"I thought of that, but it won't work—there isn't half enough metal in the lot, and the filaments in particular are so tiny that I couldn't possibly work them over into a big one. Then, too, we haven't got many spare tubes, and if I smash the ones we're using, I put our communicators out of business for good, so that we can't yell for help if we have to drift home—and I still don't get any mercury."

"Do you mean to tell me there's no mercury on this whole planet?"

"Not exactly; but I do mean that I haven't been able to find any, and that it's probably darned scarce. And since all the other metals I want worst are also very dense and of high atomic weight, they're probably mighty scarce here, too. Why? Because we're on a satellite, and no matter what hypthesis you accept for the origin of satellites, you come to the same conclusion—that heavy metals are either absent or most awfully scarce and buried deep down toward the center. There are lots of heavy metals in Jupiter somewhere, but we probably couldn't find them. Jupiter's atmosphere is one mass of fog, and we couldn't see, since we haven't got an infrared transformer. I could build one, in time, but it would take quite a while—and we couldn't work on Jupiter, anyway, because of its gravity and probably because of its atmosphere. And even if we could work there, we don't want to spend the rest of our lives prospecting for mercury." Stevens fell silent, brow wrinkled in thought.

"You mean, dear, that we're . . ." Nadia broke off, the sentence unfinished.

"Gosh, no! There's lots of things not tried yet, and we can always set out to drift it. I was thinking only of building the tube. And I'm trying to think . . . say, Nadia, what do you know about Cantrell's Comet?"

"Not a thing, except that I remember reading in the newspapers that it was peculiar for something or other. But what has Cantrell's Comet got to do with the high cost of living—or with radio tubes? Have you gone cuckoo all of a sudden?"

"You'd be surprised!" Stevens grinned at her puzzled expression. "Cantrell's Comet is one of Jupiter's comet family and is peculiar in being the most massive one known to science. It was hardly known until after they built those thousand-foot reflectors on the Moon, where the seeing is always perfect, but it has been studied a lot since then. Its nucleus is small, but extremely heavy—it seems to have an average density of somewhere around sixteen. There's platinum and everything else that's heavy there, girl! They ought to be there in such quantity that even such a volunteer chemist as I am could find them!"

"HEAVENS, Steve!" A look of alarm flashed over Nadia's face, then disappeared as rapidly as it had come into being. "But of course, comets aren't really dangerous."

"Sure not. A comet's tail, which so many people are afraid of as being poison gas, is almost a perfect vacuum, even at its thickest, and we'd have to wear space-suits anyway. And speaking of vacuum . . . whoopee! We don't need mercury any more than a goldfish needs a gas-mask. When we get Mr. Tube done, we'll take him out into space, leaving his mouth open, and very shortly he'll be as empty as a flapper's skull. Then we'll seal him up, flash him out, come back here, and start spilling our troubles into Brandon's shell-like ear!"

"Wonderful, Steve! You do get an idea occasionally, don't you? But how do we get out there? Where is this Cantrell's Comet?"

"I don't know, exactly—there's one rub. Another is that I haven't even started the transmitter and receptor units. But we've got some field-generators here on board that I can use, so it won't be so bad. And our comet is in this part of the solar system somewhere fairly close. Wish we had an Ephemeris, a couple of I-P solar charts, and a real telescope."

"You can't do much without an Ephemeris, I should think. It's a good thing you kept the chronometers going. You know the I-P time, day, and dates, anyway."

"I'll have to do without some things, that's all," and the man stared absently at the steel wall. "I remember something about its orbit, since it is one thing that all I-P vessels have to steer clear of. Think I can figure it close enough so that we'll be able to find it in our little telescope, or even on our plate, since we'll be out of this atmosphere. And it might not be a bad idea for us to get away, anyway. I'm afraid of those folks on that space-ship, whoever they were, and they must live around here somewhere. Cantrell's Comet swings about fifty million kilometers outside Jupiter's orbit at aphelion—close enough for us to reach, and yet probably too far for them to find us easily. By the time we get back here, they probably will have quit looking for us, if they look at all. Then too, I expect these savages to follow us up. What say, little ace—do we try it or do we stay here?"

"You know best, Steve. As I said before, I'm with you from now on, in whatever you think best to do. I know that you think it best to go out there. Therefore, so do I."

"Well," he said, finally, "I'd better get busy, then—there's a lot to do before we can start. The radio doesn't come next, after all—the transmitter and receptor units come ahead of it. They won't mean wasted labor, in any event, since we'll have to have them in case the radio fails. You'd better lay in a lot of supplies while I'm working on that stuff, but don't go out of sight, and yell like fury if you see anything. We'd both better wear full armor every time we go out-of-doors—unless I'm all out of control we aren't done with those savages yet. Even though they may be afraid of the demons of the falls, I think they'll have at least one more try at us."

While Nadia brought in meat and vegetables and stored them away, Stevens attacked the problem of constructing the pair of tight-beam, auto-dirigible transmitter and receptor units which would connect his great turbo-alternator to the accumulators of their craft, wherever it might be in space. From the force-field generators of the "Forlorn Hope" he selected the two most suitable for his purpose, tuned them to the exact frequency he required, and around them built a complex system of condensers and coils.

Day after day passed. Their larder was full, the receptor was finished, and the beam transmitter was almost ready to attach to the turbo-alternator before the calm was broken.

"Steve!" Nadia shrieked. Glancing idly into the communicator plate, she had been perfunctorily surveying the surrounding territory. "They're coming! Thousands of them! They're all over the bench up there, and just simply pouring down the hills and up the valley!"

"Wish they'd waited a few hours longer—we'd have been gone. However, we're just about ready for them," he commented grimly, as he stared over her shoulder into the communicator plate. "We'll make a lot of those Indians wish that they had stayed at home with their papooses."

"Have you got all those rays and things fixed up?"

"Not as many as I'd like to have. You see, I don't know the composition of the I-P ray, since it is outlawed to everybody except the police. Of course I could have found out from Brandon, but never paid any attention to it. I've got some nice ultra-violet, though, and a short-wave oscillatory that'll cook an elephant to a cinder in about eight seconds. We'll keep them amused, no fooling! Glad we had time to cover our open sides, and it looks as though that meteorite armor we put over the projectors may be mighty useful, too."

On and on the savages came, massed in formations showing some signs of rude discipline. This time there was neither shrieking nor yelling; the weird creatures advanced silently and methodically. Here and there were massed groups of hundreds, dragging behind them engines which Stevens studied with interest.

"Hm . . . m . . . m. Catapults," he mused. "You were right, girl of my dreams—armor and bows and arrows wouldn't help us much right now. They're going to throw rocks at us that'll have both mass and momentum. With those things they can cave in our side-armor, and might even dent our roof. When one of those projectiles hits, we want to know where it ain't, that's all."

Stevens cast off the heavily-insulated plug connecting the power plant leads to his now almost fully charged accumulators, strapped himself and Nadia into place at the controls, and waited, staring into the plate. Catapult after catapult was dragged to the lip of the little canyon, until six of them bore upon the target. The huge stranded springs of hair, fiber, and sinew were wound up to the limit, and enormous masses of rock were toilsomely rolled upon the platforms. Each "gunner" seized his trip, and as the leader shrieked his signal the six ponderous masses of metalliferous rock heaved into the air as one. But they did not strike their objective, for as the signal was given, Stevens shot power into his projectors. The "Forlorn Hope" leaped out of the canyon and high into the air over the open meadow, just as the six great projectiles crashed into the ground upon the spot which, an instant before, she had occupied.

RUDIMENTARY discipline forgotten, the horde rushed down into the canyon and the valley, in full clamor of their barbaric urgings. Horns and arms tossed fiercely, savage noises rent the air, and arrows splintered harmlessly upon steel plate as the mystified and maddened warriors upon the plain below gave vent to their outraged feelings.

"Look, Nadia! A whole gang of them are smelling around that power plug. Pretty soon somebody's going to touch a hot spot, and when he does, we'll cut loose on the rest of them."

The huge insulating plug, housing the ends of the three great cables leading to the converters of the turbo-alternator, lay innocently upon the ground, its three yawning holes invitingly open to savage arms. The chief, who had been inspecting the power-plant, walked along the triplex lead and joined his followers at its terminus. Pointing with his horns, he jabbered orders, and three red monsters, one at each cable, bent to lift the

plug, while the leader himself thrust an arm into each of the three contact holes. There was a flash of searing flame and the reeking smoke of burning flesh—those three arms had taken the terrific no-load voltage of the three-phase converter system, and the full power of the alternator had been shorted directly to ground through the comparatively small resistance of his body.

Stevens had poised the "Forlorn Hope" edgewise in mid-air, so that the gleaming, heavily armored parabolic reflectors of his projectors, mounted upon the leading edge of the fortress, covered the scene below. As the charred corpse of the savage chieftain dropped to the ground, it seemed to the six-limbed creatures that the demons of the falls had indeed been annoyed beyond endurance by their intrusion; for, as if in response to the flash of fire from the power plug, that structure so peculiarly and so stolidly hanging in the air came plunging down toward them. From it there reached down twin fans of death and destruction: one flaming and almost invisibly incandescent violet which tore at the eyes and excruciatingly disintegrated brain and nervous tissues; the other dully glowing an equally invisible red, at the touch of which body temperature soared to lethal heights and foliage burst cracklingly into spontaneous flame.

In their massed hundreds, the savages dropped where they stood, life rived away by the torturing ultra-violet, burned away by the blast of pure heat, or consumed by the conflagrations that raged instantly wherever that wide-sweeping fan encountered combustible material. In the face of power supernatural they lost all thought of attack or of conquest, and sought only and madly to escape. Weapons were thrown away, the catapults were abandoned, and, every man for himself, the mob fled in wildest disorder, each striving to put as much distance as possible between himself and that place of dread mystery, the waterfall.

"Well, I guess that'll hold 'em for a while," Stevens dropped their craft back into its original quarters in the canyon. "Whether they ever believed before that this falls was inhabited by devils or not, they think so now. I'll bet that it will be six hundred Jovian years before any of them ever come within a hundred kilometers of it again. I'm glad of it, too, because they'll let our power plant alone now. Well, let's get going—we've got to make things hum for a while!"

"Why all the rush? You just said that we have scared them away for good."

"The savages, yes, but not those others. We've just turned loose enough radiation to affect detectors all over the system, and it's up to us to get this beam projector set up, get away from here, and get our power shut off before they can trace us. Snap it up, ace!"

The transmitter unit was installed at the converters, the cable was torn out, and, having broken the last material link between it and Ganymede, Stevens hurled the "Forlorn Hope" out into space, using the highest acceleration Nadia could endure. Hour after hour the massive wedge of steel bored outward, away from Jupiter; hour after hour Stevens' anxious eyes scanned his instruments; hour after hour hope mounted and relief took the place of anxiety as the screens remained blank throughout every inquiring thrust into the empty ether. But they knew they would have to keep sharp vigilance.

End of Part I

What Do You Know?

READERS of Amazing Stories have frequently commented upon the fact that there is more actual knowledge to be gained through reading its pages than from many a text-book. Moreover, most of the stories are written in a popular vein, making it possible for anyone to grasp important facts.

The questions which we give below are all answered on the pages as listed at the end of the questions. Please see if you can answer the questions without looking for the answer, and see how well you check up on your general knowledge of science.

1. What divisions of the particles of matter can give a simple expression of their relations? (See page 301.)
2. If in space traveling the vessel kept in the plane of the ecliptic, what danger would ensue? (See page 303.)
3. What part of the human system might be expected to cause "space sickness"? (See page 304.)
4. How would lower gravitation affect the falling of liquid substances, such as the water in a waterfall? (See page 309.)
5. What were the names in English of the Greek titles Poseidon and Zeus? (See page 322.)
6. Who or what was the idol, Bel? (See page 327.)
7. What is the Quetzal? (See page 328.)
8. What did the old time Scandinavians or Vikings call their warships? (See page 330.)
9. Where would the moon rise if the earth ceased to revolve on its axis? (See page 341.)
10. What is the name of the fungus supposed to be on the borderland between the animal and vegetable kingdoms? (See page 349.)
11. If sodium chloride in solution in water acted on a metal directly giving up its chlorine to it, what would become of the sodium? (See page 362.)
12. How would the transmission of sound be affected by altitude? (See page 369.)
13. What idea is indicated in the word mycetozoan? (See page 371.)
14. What is the English language name for the fungus myxomycetes? (See page 371.)
15. Where are masses of slime mould found? (See page 371.)
16. What is the science of fossil plants called? (See page 374.)

Its architecture was very evidently patterned after the fungi that swarmed about it. Squat, bulging shapes massed about huge towering shafts—spherical dome on slender column, spiraling flame-tongue, thick-stemmed hooded parasol—all myriads shapes of the fungi, adapted to suit habitation and carved entirely from the crimson marble.

Cleon *of* Yzdral

By P. Schuyler Miller
Author of "Through the Vibrations"

THE captivating principle of life, for all we know, may be nothing but an energy form, as light, heat, electricity, or matter. In other words—a disturbance in space or ether. As such, it may well be found combined with any other energy form—light as well as matter, and with a resulting intelligence. In the present story the vapor creatures represent life in the vapor state, in matter, while the "Singing Ones" are life in the light form of energy—more plausible if you consider that light may be matter to some other vibrational system of frequencies. Though the author calls this a parallel to "Through the Vibrations," this story is, in its way, complete in itself. More than its predecessor, however, it is very reminiscent of Merritt.

Illustrated by PAUL

Foreword

THE world knows now the tale of those two intrepid scientists, Doctor Alexander Gregory and his assistant, young John Stewart, who discovered the secret of the resonator, whereby matter, or any other vibratory motion in the ether, may be raised or lowered in frequency at will. Experimenting upon themselves, they traveled to another plane, another Universe coincident with our own, and there discovered the lost civilization of Atlantis, transported there by this same secret many thousands of years ago. They found Atlantis destroyed, ravished by a race of vapor creatures without analogy in this world, and in a measure avenged the dead Atlantides by laying waste to their unnatural Underworld, deep in the heart of the planet. Then, with the spoil of the dead Atlantis, they returned to Earth.

But a month ago, the laboratory of Dr. Gregory, at Schenectady, was the scene of a remarkable occurrence. In the middle of the afternoon, as Stewart was at work on some experiments with orichalcum, the radioactive alloy of Atlantis, there was a shattering of retorts, and he turned to find a strange man, strangely clad, lying unconscious on the floor, having apparently fallen some ten feet. He recognized him instantly as an Atlantide, and with the aid of Dr. Gregory obtained his story.

He was a scientist of Atlantis, from a city still extant upon an unexplored part of the planet. His ruler had found the manuscript left in Yzdral, a city of Atlantis, by Dr. Gregory during the expedition twenty years before, and Atlantis was sending some of her best scientists to Earth in order to promote friendly and mutually advantageous relations between the two worlds. As has Dr. Gregory, this ruler, Cleon, has feared the consequences of unlimited commerce between the worlds at present, and only a limited number of men from both worlds have since made the trip, Dr. Gregory, of course, being among the first. The following manuscript is the story of this Atlantide emperor, and forms, in a sense, a sequel or parallel account of the occurrences related in the story of the first expedition.

Cleon of Yzdral

I AM CLEON of Yzdral, Keeper of the Gates by the Oath of Poseidon, First Man of the Ranks of Thula, Emperor of Atlantis. I was a child of ten years when Luda fell, and Yzdral the Beautiful, and all the cities of the Second World, Poseidon, save only Thula, the First, City of the Overlords. I will be an old man when the children of Poseidon see again the First Planet. This is my tale, the tale of that Underworld beneath Luda and Yzdral, and of the Things of darkness, and of those others, like them, yet not as they, which the men of Thule have named the Singing Ones. It is a

strange tale, and not short, yet of all men none has seen more than I. One other there was, then, a youth and I a full aged man, but he is—not as we.

My father was Keeper before me, and as a child I remember leaving the rose-red globes of Yzdral far below and rising up, up where strange trees and growths of crystal mazed the roof of our inner world. I remember the great bronze cup, with its bare little cells, and the flaming pool of rose-light at its heart. To him who was my father the great green gates of the black tower opened, and a strange bright world of green and polished black lay without. Often we ventured into it, he and I, lived in its marvels for many days. Together we would lie in the lush grass below the black cliffs, the oily green sea rolling afar off beneath the green sun, heavy fragrant blooms drooping over us, and watched the colors play among the shafts of white and royal purple that jutted up from the pitted red clay. And he would tell me the lore of the race—tales tens of centuries old, written in queer old script on crumbling scrolls or handed down by word of mouth, tales of the First Planet. And I would laugh, wisely, for even a child might know them as dreams, untrue. And I was a child.

In the Book of Quetzal they were, the scroll which is all we know of that first planet from which we came. It tells of an empire of many isles, whose power was all over the world—red race, and black, and swarthy white, even the tall fair warriors of Thule and the crafty Yellow Ones beyond the Second Sea. It was a fair, wonderful world, low sunk in the azure sea, with the plumed summit of snowy Quetza towering above Thula of the many gates. There were trees, and blossoms of untold hue, and in the air flitted little silent forms of fragile color, powdered with gem dust, while other larger beings, like them but softly plumed, made music among the treetops. And there came one, Emperor of Atlantis and Priest of the Thunderer, who took to himself the name of fiery Quetza—Quetzalcoatl, Prince of the Plumed One. He claimed brotherhood with the spirits of the mountain, and from the radiant metal of the upper crags he drew the secret of the lightnings, and toyed with it for the conquest of the world. There came war with the rebel tributaries, and in a vision, as he lay stricken on the floor of the council chamber, the Thunderer came to him, and He of the Seas, who is our guardian, and spoke. Then he saw that his race must perish for the evil that lay in it, and he rose and called down the lightnings of Zeus (Jupiter) upon Thula. But Poseidon (Neptune) intervened, and the men of Atlantis came to the Second Planet. A fairy tale, a net of dreams, I thought, but now—I know not.

More he told me, that I believed, of the outer world where we lay. Far off, beyond the ever rolling sea, lay Quetza, no longer smoke-plumed as of old, and Thula the ancient, now city of the Overlords, and beyond, the Southern Land of floating rock and flaming mountains. Other land there was none, save this where we lay, walled by the desert of black toward the sunrise, and toward the sunset by low, crannied mountains that dropped slow to the sea beyond. Between lay a wide basin, filled with rank swampage and haunted by fearful monsters of the dead past, their day long gone, lingering through chance. Some day, he said, he would show me these.

He spoke of the Overlords, men of wealth and power who drove the people of Atlantis from the upper world and lived, deathless, dreaming of the Universe. He told of yet another Quetzalcoatl, hereditary Prince of Quetza, who led the striving races into the inner world, built the towers that brought air to the great caverns, raised Yzdral and Luda and Kor from the level plain, made light that grain might grow. And he hinted of that unseen, dreaded Underworld, mile on mile beneath, long since sealed off by those who had found it, and been afraid.

I remember that day when the hard black rock sped past beneath, until a new world stretched on and on, rising from lush dark green to the rolling violet of the far horizon. Below, the matted swamp, a green-scummed lake and sluggish river festering in its midst. Beyond, swelling green uplands, great open groves of fragrant, steepled trees, brought from the First Planet by the Overlords, and other trees, massive and spreading, with lobed leaves and little, hard fruits in tiny scaled cups. And farther still the weathered rock of the mountains. A voice rang up and up, a thrilling, spiraling music of heaven. Father showed me a little russet creature, a bird with speckled, swelling throat, that sang and sang until our ears failed us, and yet sang on, higher than man might hear—a being of the First Planet. Too, I saw the loathsome things of the swamps—huge hulks of swinging flesh, with long thin necks and tails, little flat heads, and stupid staring eyes—that bleated and bellowed in fear and floundered helpless in the mire as our little aero swooped low.

Thula, I did not see, then. "My son," he said to me slowly. "When that day comes when I am gone, and you are Keeper in my stead, take this gem to Thula, there beyond the seas, and judge by what you see. It is my legacy to you, and it is your duty to me and to your grandsire to obey. Once—but enough!"

THEN Luda was blasted, and the grey clouds of death swirled about Yzdral the Beautiful. Beneath the trident of Poseidon he stood, my father, and led that hymn of the first planet which men sing over the dead in battle. A frightened child, muffled in a great suit and crystal head-piece, I fled to the surface, bearing the gem which my father gave me in that last long moment before the gates were opened to the milling mob. For days I wandered, over the endless sea of rolling green, until a dot of white lay on the horizon, and Quetzal rose from the waters beneath my tiny aero. Through the quiet streets, between stately rows of marble palaces, I strode unafraid, bearing my blood-red gem to him of the snowy beard, who was ruler here, and Prince of Quetza. He took it from my outstretched palm, and gazed long at it.

"Once was he, too, one of us," he said slowly. "He was of the men of ancient Hellas, slaves of Atlantis, who rose against their masters and brought beauty to this planet at long last. Do ye think so harshly of us, Cleon, the cruel Overlords, who drove a decaying people into the caverns where they might perish, or else rise to new beauty and new life? He hated us, I think, and when he went he swore that when this gem should return, we might judge by the bearer if the people of Atlantis were not equals of Hellene slaves. He must have been your father's father, Cleon, for with him went a child of your age. What is your thought, Cleon? You have seen the beauty of this Upper World. Shall cities mar it? Shall Atlantis return?"

"Atlantis will never return, O Master, for Atlantis is dead. I seek vengeance, and knowledge of that Underworld that was sealed so many ages past, from which grey death has spewed to slay the children of Poseidon. If ye be men, willing to judge by me a race, avenge those who have died!"

"Oh!" It was short and quick, like a sob. "I had thought—otherwise. The Underworld has struck, at last! Tell me of it."

And I told him of the pit that had struck up through Luda, of the tempests that sucked the air from our great caverns, and of the grey death-spores that rose from below, blotting out the life of our world so hideously. He listened, a memory of fear in his face, until I had done.

"Cleon of Yzdral," he said finally, "we will avenge Atlantis. We of Thula know long life. Once, before the barrier was placed, I saw that Underworld. If it has opened a way, of itself, there can be only war. It will take many years to prepare, for we have forgotten the ways of war. I will not live to see our victory or defeat, but I will show you the entrance, that you may go among them unawares, and, Cleon, if your judgment falters in the future that must come, heed my advice. Place your trust in that which you see as wholly beautiful."

Thirty years is a long time, and in it much was done. It had long been certain that none survived save the hundred thousand of Thula, a fourth of them suited for war. For twenty years after my coming to maturity, we strove to perfect ourselves and our weapons to such an extent that we might hope for success against the Things, at which musty, long-forgotten records hinted. We had the ray that carves rock, long a tool of my people, and the blue barrage of the Overlords, but no more. Vainly had I sought the ancient records for mention of that lightning of Zeus that was the weapon of the First Planet, but all had been burned by that zealot who had brought about the change. And so our plans were made.

In a small cavern, just above the portal into the Underworld, we had carved our first fortress and city, beside the great fault that ran up five hundred miles to our desolate inner world. The portal we would also fortify, and then carve a second fortress, somewhere in the rocky wastes of the mountains that girdled the sea of the Underworld. Should the first city fall, the opening to the surface would be automatically sealed, giving respite to the remaining people of Thula.

I can never forget my first sight of the Underworld. Down the great chasm of the fault floated aero after aero, bearing the fifty thousand of our army to the squat black city that was rising from the cavern floor. About it ran a thin red ribbon of orichalcum, ready to set up a barrage of flaming energy that no normal force could pass. Far beyond, flanking the huge arch of the opening, were long low fortresses, while three great sheets of flickering blue sealed the opening itself. Below, the fault dropped into unfathomed blackness, the sheer rocks slowly narrowing. It closed at both ends of the cavern, at one of them the triple barrier.

The barrage dropped, and I sped through, between the looming walls of the forts, into a winding, vaulted passage that dropped slowly for perhaps a mile until it opened, high in the face of the cliff, on a wilderness of tumbled black rock, harsh and ragged as if splintered by a sudden blow. Far to the left, through the clustered crags, a pale white sea lapped soundlessly. Above, luminous grey clouds hung low, concealing the roof of the huge cavern, which, from the curvature of the wall, must lie not far above, perhaps a mile at the most. To the right, the fault opened again, this time widening as it sank into the bowels of the planet, and extending out of sight along the sheer end wall of the cavern.

Not until all was in readiness did we venture beyond the mountains. Then, leading a fleet of a hundred aeros, I set out over the troubled waste, following the chart of those who had been here many years before. Then the mass of black crags was past, and we sped low over a twisted jungle of horrible vegetation—smooth tentacular trees rising from steaming pools of creeping yellow scum, slimy limbs twisting with sentient life, livid moulds of fungi making great dripping sores in the smooth, leathery trunks—a living, hellish morass! Huge orchid-like blooms of rotten purple and festering, angry crimson clung to the trunks and branches, stirring hungrily as fetid, putrid odors floated up from the swamp. Here and there in the sluggish waters a glistening formless thing would disturb the slowly stirring yellow scum. Now and again a tentacular limb would writhe down into the slime and return, dripping with filth, its cup-shaped end of smoky orange slowly sucking in an agonizedly twitching form. Once we saw a huge pale grub, larger than a man, blindly groping in the tangle of snaky roots, its naked body horribly alive with fungus. It was revolting, disgusting, and we were glad to skirt the steep black shore, hanging low, searching for the natural amphitheater that lay somewhere beyond this living morass.

At last it lay beneath us, a narrow, rising defile opening into a broad, low-walled oval. Here would be our second walled city-fortress, where we would lie in wait, while our ships searched for the unknown Things whose city, whatever it be, lay somewhere beyond in the heart of the swamp. We had come prepared to build, and soon the rock-dust was being blown aside by the cutting blasts, as a strong squat city took form on the level plain—low enough to afford a poor target for missiles, massive-walled, roofed with the unbroken rock from which it was carved, with the great aero-pit in its center and tier after tier of rooms spreading out over an area nearly equal to that of one of our great ventilators. About it, and across the neck of the defile ran the thin ribbons of orichalcum that gave rise to our blue barrage. All this for defense. We must learn more of the Things that we must combat, before we could choose our weapons.

FOR months we had lost contact with the first city, and now at last I led half our number homeward for reinforcements. Low through the steaming mists, skirting the shore for safety, we sped toward the triply barred portal leading to our great stronghold. Soon the gaping corridor opened before us, and we shot up its tortuous length, bringing up short before the opening into the cavern, shocked, startled, wondering. *The triple barrage was gone!*

Reckless of all save the fate of our comrades, we hurtled through the great arch into the cave. Where hope had been, lay despair. Fused into a waxen grey slag, billowing on the cavern floor, were the remains of our city, the fortress held by four-fifths of our little

army. Gone were men, aeros, supplies, everything, cruelly annihilated while their leader was not with them, was supervising the work that a man in ranks might have seen to, gratifying his curiosity as to the strange world beyond the barrage! Only the fused waste remained, melted by some weapon far more awful than anything of ours. It meant the end for the people of Thula, as for them of Yzdral and Luda!

As we put about to leave, a single small aero, capable of carrying twenty men, dropped from the gloom of the chasm above, a lone survivor of what had occurred. We dropped to the cave floor and advanced to meet the single figure that came to meet us. He gave the salute, arm raised, palm forward.

"Sir," he reported, "I was a messenger from Thula, bearing a request for news of your progress. As I came into the cavern, I saw at once that the barrages at the portal and about the city were gone. Flooding over the city were thousands of great spheres of light, bursting into cascades of flame that made the hard basalt flow like water, fusing the great fortress into a smoking chaos that suddenly began to turn white with frost! Then the spheres disappeared, suddenly, into thin air, and the cavern was empty! There was a great storm, and then, after a long time, you came. And, Sir, I—I suppose you do not believe me, but *there was nothing there,* nothing but the spheres of flame. I swear it! I am telling the truth, or else—I must be mad."

"I believe you. You have seen nothing of this Underworld. You will be more credulous when you have. You are not mad, do not fear that. Why, the explanation is simple, very simple, and what you have seen will aid us greatly! The enemy, whatever they are, were camouflaged to match the black rock. No wonder you could not see them! What is really serious is the fact that we are cut off from the upper world, isolated to win or lose as we stand, alone! We must return at once, and prepare for sudden attack. Come, follow us."

Apparently the Things did not know of our presence in the oval valley, for during the next two months we were not molested. As a further precaution against surprise, the mile of plain between the barrage and the fortress was riddled with fine jets which would spray forth a quickly drying white enamel, effectively showing up anything on it. Later, while I was gone, it was extended beyond the barrage, to give ample warning of approach. Little good it could do us, but that we did not know then, and when we did it was too late.

Then, one day, tired of waiting so fruitlessly, I manned a small aero with twenty of my youngest men and set out on a scouting cruise. With me, in the little control room in the bow of the ship, was the same youth who had witnessed the destruction of the first fortress; he was named Hektor (Hector of Troy) after the custom of the Overlords, a name of ancient Hellas. He seemed carefree, and scornful of an enemy that must resort to disguise, and babbled light-heartedly of a long poem which he would some day write, an epic of our conquest of the Underworld. There was a girl, too, older than he, back in Thula, who would welcome him, a hero, and be less haughty before the returned warrior. He sang the old songs of the First Planet, epics always, of that first Prince of Quetzal, who bore learning into the western lands under the plumed manner of the world-serpent, Quetza, whose mouth was the mountain above Thula, of the old sea-rovers whence our race sprang, rousing ballads of war and victory and reward. Poor lad, how could he guess that he would never again see Thula, never even be able to die? I was twice his age, already grey. Why could I not have gone, rather than he? I think that to me life among the Singing Ones would not be cruel, but for him, with hopes and memories fresh in his mind, I am sure that that part of him that is yet of Man yearns for the old life. But it was not willed.

And now, miles away over the steaming swamps, the land was rising slightly, giving birth to a new form of life. The grey and slimy yellow of the jungle gave place to a riotous chaos of raw color—bruised purples, angry crimsons, wan whites, smoky oranges, pale blues. There lay an enormous tangled forest of gigantic fungi, bulbous and distorted, that stretched as far as the eye could scan into the lowering grey mists. There were huge bulbs on thick stems, and slender twisting spires, and thick, squat slabs—a livid nightmare forest. And above it billowed vast dark clouds that tossed uneasily in the fitful air currents that swept in from the swampland, the grey death-dust that had slain Yzdral. Here, somewhere in this wilderness of raw, rotting color, must be the city, the stronghold of the Things we sought. Even as we looked out over the twisted sea of vegetation, the luminous mists swept aside for an instant, and there at the limit of sight lay a blot of color more vivid even than the fungi, a blaze of crimson, that vanished again as the clouds swooped in around us. At a word from me, we drifted slowly over the wilderness of fungus growths toward that half-seen vision, moving slowly and carefully to avoid surprise, for in that instant we might well have been seen.

Hektor was watching the twisted forest drift past beneath us, trying to count the myriad forms and colors, perhaps even classifying them mentally. Suddenly he pointed ahead.

"Look, Sir! Below there—that cloud. It must be from a very different sort of fungus, for it is black, so very black that it is hard to see. All these other spore-clouds are grey, like the death-dust. Might we hover for a moment, Sir, so that I can look for the fungus?"

"Certainly. It is a very interesting thing to find here, is it not? Give the order to drop, and hover over it."

I was, myself, interested, for the cloud was extremely queer-looking. It was, as Hektor had said, practically invisible, seen only in silhouette against the vivid colors of the fungus below it. It was moving slowly, as if it were being sucked up into a sort of spherical ball, moving with a queer viscidity that I had never seen in vapor before. It was apparently very dense, hanging even lower than the luminous ceiling of clouds and the masses of grey spores, just above the tops of the fungi.

NOW we were hanging motionless, barely five hundred feet above it, and I could see plainly that it *was* condensing into a smooth, perfect sphere that seemed to be revolving slowly. Yes, it was spinning more and more rapidly with every second, and shrinking simultaneously into a globe less than half the size of the original sphere. I could feel a tenseness in the air, a breathlessness that plucked at the mind and stretched it to the breaking point. Hektor looked drawn and pale beside me, his eyes filled with something that I could not state in words, but which I could feel in me, too,

tearing at my mentality. Then the tension burst, the black sphere leapt in an instant to twice its original size, then collapsed again like a pricked bladder into a little black globe from whose hidden heart burned a rosy radiance, spreading, swelling into a great mottled orb of opalescent flame, that spun dazzlingly before us as the tension grew again to unbearable magnitude. Beside me, Hektor gave a strangled, agonized groan, rising suddenly to a high-pitched chatter of terror.

"Zeus! The flame! Poseidon save me! Why do you stand there, you fool? Zeus damn you, can't you *see? It is the flame—the Thing!*"

Madly he hurled me aside and jerked at the controls. Like a falcon unhooded, we sprang into the air, fled blindly. What could he mean? Was he mad, fascinated by the shining globe of light? Or could it be—*could that cloud of black vapor be the Thing we were seeking to destroy?* The reply came soon. From the whirling ball of light a light darted jet on jet of rose-flame, beautiful but awful, blinding us! On the instant came a blaze of awful heat, then we were falling headlong through empty air, gasping in the unnatural atmosphere, the half destroyed control room still about us, while ship, crew, everything else fell in a searing rain of molten matter! Huge twisted forms rushed up at us, there was a pulpy rending, a shattering of crystal, and black silence!

I came to myself to find the remains of the control room buried in a disgusting mass of fungoid refuse, which we had brought with us in our crashing descent. This it was that broke our fall and saved us from later destruction by the black mist-creature, for when we struggled out of our crystal prison, shaken and filthy, but otherwise quite safe, we found the fused remains of the aero fairly bristling with frost crystals. The air near the wreck was deathly cold, and the fungi nearest the burned area were shriveling under the unaccustomed temperature. Above, from the lowering clouds, was dropping a fine grey snow, such as is but rarely found in the upper world.

Hektor, rather sheepish since his display of unguarded terror, spoke timidly.

"Sir, what makes this? We saw that Thing melt the aero. We felt the awful heat. And now it is so cold—frost forms on the wreckage. I—I cannot understand how it can be, yet it is just as I saw it before, at the city." He shuddered at the memory of that scene.

"I am beginning to understand much of the nature of this Thing, Hektor," I replied. "Perhaps if we can reach the fortress again, I can devise a weapon or a better defense. It hurls energy, pure energy drawn from itself, into whatever it attacks, causing it to disrupt and fuse under the strain and sudden release of heat. Then, when it is all over, it sucks back the energy out of the molten mass, its own energy and the energy of the thing it destroyed, leaving it absolutely heatless. I think, Hektor, that were that fused metal not too awfully cold to touch, even the smallest bit would tax our strength to lift. Its particles are packed very closely, closer than in anything natural that we may find. Does not that mass of metal seem small, to have been an aero, and does it not seem unnaturally smooth and dense? Were we to remain here, it would expand almost visibly as heat came into it from the air and gave its particles energy of motion, kinetic energy. But it is too cold to remain here, and the convection currents will bring on a storm such as you saw in the cavern of the first city, a storm the like of which these jungles have never seen. Have you any idea as to where the fortress lies?"

"None, Sir. The compass was in the other part of the control cabin."

"Then we must search as best we can for the edge of this forest, where we can see the mountains. There will be the swamp to cross, though, unless they search for us with an aero. Come, we are doing no good here, and the Thing may return."

For days on end we struggled through that putrid tangle that was the ages-old floor of the fungus forest, while overhead the pale clouds were tossed and torn by the great winds that raged through the thin air, limited only by that thinness, while great fungi toppled and fell about us with a horrid liquid crushing of massive fleshy growths, adding to the deep mat of decayed matter that covered the ground. Rivers of cold air followed the contour of the fungus jungle, blighting the huge bulbous things as they flowed through the hollows. But the storm was brief in duration, the half-buried mass taking up heat very quickly from the rotting mould, though not as fast as the fortress, with its far greater surface. Then, at last, after many days of blind stumbling through that nightmare wilderness, suffering from the thin air until our burning lungs adapted themselves to their task, the fungi grew smaller, thinned, and vanished entirely, leaving us on the edge of a great smooth cup of glassy, black basalt that sloped steeply down for nearly half a mile, and curved out in a mighty oval bowl five miles across.

In it lay the Crimson City of the vapor creatures. Built entirely of crimson marble, with an underlying tinge of deep scarlet, it lay like a blazing coal in the heart of the black bowl. Its architecture was very evidently patterned after the fungi that swarmed about it. Squat, bulging shapes massed about huge towering shafts—spherical dome on slender column, spiraling flame-tongue, thick-stemmed hooded parasol—all the myriad shapes of the fungi, adapted to suit habitation and carved entirely from the crimson marble. At the edges, the buildings were low and sprawling, and as the center was reached, they rose into a thrusting twisted maze of crimson forms, shooting up in a nightmare wilderness in perfect monochrome mimicry of the monstrous jungle behind us, clustering about some central horror that was hidden from us. And everywhere between the smooth red walls flowed dense black shapes of mist, drifting slowly and flowing in viscid haste from opening to black opening that flecked the crimson shafts. Above the silence, from somewhere in the city's heart, rose a fine thin keening, at the very peak of the ability to hear, as of a taut wire whining in the gale. It was a tense, unpleasant sound that made me shudder involuntarily, sending little icy chills up and down my spine, and I saw Hektor grit his teeth suddenly and fiercely at the sound. Yet there was damnable fascination in it, and in the city with its tangled inferno of crimson stone, and we stood gazing at it, regardless of the danger of our position.

WE suspected nothing, until the reflection of the city in the polished rock at our feet suddenly vanished, and a darting arm of black vapor rose to blot out the crimson vision, then dropped about us. At

once we knew that these invisible things were not of any ordinary vapor, for through such we might have ploughed with ease to the shelter of the fungi. This black stuff was as dense as it looked, and denser by far, for we battered at its closing wall as at rock. Yet it had not the feeling of rock, to the touch, for there was a yielding to it, almost as of flesh, and a subtle energy that made me tingle from head to foot. Strange stuff indeed, a definite physical barrier, yet for all its firmness a vapor, whose outer edges were tossed by the winds that still stirred. Frankly, it was beyond all my understanding of the properties of matter. Certain it was that such a property must needs be governed by conscious control, like a flexing of our own muscles, yet it should have been utterly impossible in a vapor. My mind refused to grasp its actuality.

Now the vapor swirled above and beneath us, and the solid ground dropped out from under our feet. There was a moment's sickening drop into emptiness, then a long smooth glide, constantly accelerating, and a series of complex motions that we were unable to interpret. One thing gave us a clue, trapped as we were in the heart of the vapor thing. The piercing wail from the crimson city swelled into nerve-shattering shrillness, rising slightly in pitch as we sped faster, then seemed to loose its direction and pureness of pitch, telling us that we were now in the city itself, speeding between those echoing crimson walls.

And now the thing thickened beneath our feet, and we were shoved up and out, through a widening gap, into the light, out on the top of the great cloud of vapor, encircled to the waist with its binding coils. We were driving straight into that tumbled labyrinth of crimson fantasy that was the heart of the city. Through the twisting corridors, pouring from narrow slot-like openings, converging on our creature and joining themselves to it, came hoards of the vapor things, great and small, wisp and cloud, merging in one great body, one enormous Thing, carrying us Zeus knew whither, for some great, unknown purpose that required its presence as an integrated entity, a race of one Thing, yet of numberless parts.

The distorted crimson walls clustered closer, denser, merging into a great oval central mass of rose-pink, a narrow black slit high in its side. And we were being lifted high on a column of black mist, racing at breath-taking speed straight for that single visible opening, then hurtling through and down into the light again, the body of the mist sweeping after us.

We were in a mighty bowl of purest white, blending to a rose-flush at the towering edges. Up from its very center stabbed a flickering shaft of vivid blue light, and from it shrieked the wailing, shattering at our ears incessantly, filling all the great bowl with its horrid din. A misty arm shot forth from the body of cloud that bore us, and caressed a squat black block, set with little red cups, that lay beside the gaping pit from which the shaft sprung. The shriek rose to a crescendo and vanished, and in the folds of my clothing I felt a crystal lens shatter to bits. And then we were set down beside the low black railing that barred us from the blue shaft, while all about, bathing the snowy walls of the cup with their inky flood, were the mist folk, circling us completely, barring all escape save the pit. As in answer to my thought, an arm of vapor shot forth from the edge of the black mass, wrenched the slender pack from Hektor's back, and flicked it into the shaft of blue light. It vanished into a golden haze, that became merely a local deepening of the blue, then diffused and disappeared. There was no escape there!

What followed I have never precisely understood—how the vapor creatures were able physically to suck information—thoughts—from our brains. But the fact remains. Out of that murky cloud, visible only by the dead black contrast of its boundaries, sprang two thin coils of mist that settled rigidly over our heads, capping them with clinging black fog, closing about our brains. They had not the cold, damp feeling of fog, or of most of the ordinary vapors, but almost a bodily warmth, filled with pure energy. I felt as never before the aliveness of these folk of black mist.

Through the snug contact of the caps, I could feel a rhythmic unease flowing through all that great mass, stirring it in slow uncertain waves that gained strength and purpose as time passed, felt what I could not see. Then came the voice of the creatures, how produced I know not, but a true voice of communication and expression entirely apart from the unity of thought contact that was in their strange mingling. It was a low, deep-throated crooning, floating up as at a great distance, with something of a forlorn wail in its fathomless depth. At first, like busy insects in the gardens of Thula it came, tentative and dreamy, then with the purpose and unison of the swarming hive, swelling in volume and meaning far beyond all human powers of comparison, lifting in long surging billows of sound that lulled like the listless swell of the sea in calm. We were comfortable, drowsy, wrapped snugly in the warm blankets of the mist, soothed by the rolling drone of music that flooded about us, lulling and lulling. Sleep was good, after all the labor of the past, and I felt my senses numbing slowly, deadening, my will slipping lazily into slumber. But somewhere, as a bright clear flame in the dreaming sea of blackness, conscious awareness burned in my brain. Even as my muscles sagged in unconsciousness, it blazed bright, almost as a second external self. And in it, or with it, I felt the cunning draining of my mind, the sapping of my knowledge, sucked out into that great body of black life, every fact, every thought and nervous impression of my life flowing eagerly into that relentless maw. And I knew that the hidden fortress was doomed!

I do not know how long I lay senseless, part of the Things. I came again to life in a small unbroken sphere of crimson rock, ventilated, lighted I know not how. In my brain lingered the mocking echo of the crooning of the mist people, and with it an emptiness, a lightness, a feeling of expansion, and I remembered the sucking of the vampire Things. I must still have been of them, in part, for as I gazed bewildered about me, a portion of the wall receded and disappeared, showing a vaulted, well-lit passage without. Weakly I crawled through the narrow opening, and started slowly down the corridor toward the faint gleam of day at its end. Smooth and oval it ran, straight to a great railed balcony jutting out over the city. Rooms there must have been, cells like mine, but as mine their doors were invisible.

LEANING wearily against the broad rail was a familiar figure—Hektor. Younger than I, his mind probably less strained by the drawing forth of its smaller store, he had recovered sooner. With a word he

greeted me, then turned to gaze again out over the tangled chaos of spires and rounded roof-tops that marked the upper levels of the city. The screaming of the blue shaft had begun again, dinning in our ears from somewhere beyond our own building, while occasionally a muffled booming rose from the narrow gorges of the streets, where vocally conversing vapor-creatures drifted to and fro. For a long time Hektor was silent, then, without turning, he spoke.

"Cleon—Sir—you have seen more of this world than I, understand better its laws and possibilities. I have thought often, before, of the life that is in us, of what forms it might assume, but never did I imagine this. This—these things are alien to me, impossible. How can life be like this? Where is its analogy in our outer world? Oh, Cleon, I am afraid—of what, I cannot tell, but deathly afraid! When I felt them draining me of my thoughts, there in the arena, I was afraid that I would never regain them, never awake, to this universe at least. I have a queer feeling, here in the back of my brain, that we are dim to them, unreal, fearful menaces, perhaps. I think that they are keyed higher than we—that their droning is communication by touch rather than by sound, that that cursed wailing is but a gentle murmur to them, even below the range of hearing, except when it rises beyond our own. Perhaps they are not entirely as we see them, vapor creatures, but truly firm and solid in some other plane. And yet—their life must be strange, conflicting, for they are aware of our world, their buildings are of it. I—it is beyond me. There is truth in what I say, I feel it, somehow, and yet—there are lies, cunning lies to trap us! It—my mind—tells me so."

And I replied:

"It may well be as you say, Hektor, I do not know. But to me there is nothing impossible or without analogy in them. To me, Hektor, they are much as we. They are vapor, true, and an unnatural vapor, but I think they belong to this world more than to any other. Fundamentally there is the same backing of natural laws, though the application may be different. How do we establish contact with our world, and apply our science? Do we not draw energy from our own bodies to battle against man and nature? Do we not use pure energy, change it from form to form—matter, light, heat, work—put it into the planet from which we draw it again in food and power, to replenish and augment our store? We are not very efficient in our processes, and so we die, but these creatures need no bypaths and bridges in their cycle of energy. You saw that quality in their destruction of the aero—how they changed the energy of their bodies into the flame that fused the metal instantly, then drew it back, and more with it, to keep life in themselves. Where, fundamentally, is the difference?

"And then, their curious oneness, their seeming ability to act individually or as one unified entity, never quite one or the other, but always bound together by some tie which we do not understand. Are we not the same? Think of us men, each working for self and for race alike, living, thinking, acting alone or all too often in mobs, welded together by a single cause, a single thought, into unified action. Have you never seen a great mob, flowing like a mighty wave of humanity, relentlessly to their single purpose, its single purpose, thinking and acting as one being? I have seen men flow thus, as a mighty flooding wave in liquid—or in vapor. Is there so great a difference?

"Even their existence in vapor I can understand, dimly; can find analogy in ourselves. To me, solid life would be harder to understand than yielding, plastic vapor. You have never seen truly solid life, Hektor, nor has any man. What of our own bodies, the bodies of the other beasts of our outer world? Are they not built up of myriad tiny cells, tiny unit lives, *liquid lives?* We are liquid, Hektor, made firm and purposeful by the unity of life. These creatures about us are vapor, as we are liquid, and their unity must be greater than ours, as must be their power, their controlling mental strength that makes them what they are.

"No, Hektor, there is not such a great gap between us and them. Everywhere that life is found, there are its basic factors, the fundamentals that identify it—controlled transformation of energy, the ability of conscious unification, and motion to a purpose. All things, all evolution from lower form, all progress of great races hinge on these. Perhaps all hinge upon the first, though my mind asks for more than that alone. Many say that life is but an automatic behavior resulting from natural laws, blind and helplessly mechanical. Do not these laws of nature outline a Purpose toward which all life moves? Many say that evolution follows accidental paths toward degeneration or monstrosity, but was there not a purpose in that motion from a simple to a complex existence, futile though the result may be? Many, very many, say, that because of Man's machines and his science he shall sink back into oblivion, die the death of a race. But do not his machines make more efficient his control of energy, enlarge his store limitlessly, enable him to mould the universe into a likeness of the Purpose that includes all things? There are differences, Hektor, differences that make many men deny life for what it is. We are not as an amoeba, nor as a sea-worm, nor a flower. These vapor folk are not as we. But, to my mind, the difference is a simple one. *All things differ in life.* We are more alive, far more alive than the bacillus or the worm. And these vapor creatures are more alive than we. Any race, any entity that is able to fulfill the three bases of life, is able to control the energy of the world about him, and unify, and move steadily toward the Purpose that lies behind everything, and who can do these more intelligently, more efficiently than we, *must be more alive than we!*

"Zeus, Poseidon, Bel*—whatever you may call Him who has formed the Purpose and written the Equation of Space and Time, has made sure that so long as life shall be, so shall progress exist. We are part of that Equation, governing it and governed by it, our path predestined yet flexible to our every will. Some day, perhaps after eternity, beyond infinity, a race will grasp that Purpose in its entirety, see the great Equation in its full. Man will not, but Man will have shortened the road by many an endless age. Near the top, the way grows rougher, steeper, and race after race must live and pour its life into another race, and pass away, not dead, but absorbed into living. When two paths conflict, one must give way, as we are giving way to these Things, these vapor creatures. There must be conflict, forever, but we must know it for what it is, an attempt to put away inefficiency and disunion, by whatever sordid

*A Babylonian deity, god of the earth. He was in a triad with Amri, god of the heavens, and Ea, god of the waters.

name we call it or by whatever cruel method we accomplish it, and to rise like the bird of Quetzal* above the ashes of the past. Men will fight men, until Man must fight another race and rise on its ashes. But in fighting, men may defeat that ultimate, hidden urge, and to a degree die, sink beneath their peak for long ages, perhaps forever, while a lesser race takes their place and climbs unaided to new heights that might have been theirs.

"But this is dreaming—preaching! I cannot explain what I feel, cannot feel all that is there. In a way, it is written on Space and Time; in a way, it is for Man to write it. These Things are higher than we, but we must strive against them, and if we win we shall rise higher than they in ages to come!"

"A little I see, O Cleon," said Hektor, "but much is clouded, unclear. You are older than I, though my years are no longer my age, and your vision may be broader. The Equation I can almost grasp—its presence and nature, but not its meaning. And yet—ah, well, come! I know the way to the streets. We are free in this city, but unable to leave it. Let us try to understand more of this queer race, and how it may be defeated. Come."

As Hektor said, the city was open to us. Mentally we were *en rapport* with the things, and doors were not barred to us. We found little that we could comprehend. Life was not as we knew it, understood it. The red buildings were there, riddled with curious cells and corridors, but we could not tell their significance in this vapor world, whether home, or shelter, or—what. The vapor things ignored us, flowed silently around us in ugly torrents, as if we were rocks in the path. One bit of machinery we found, one tangible thing that could be studied and understood in part—the pit in the arena, which we named the Pit of Blue Sound.

Out of that great railed pit vomited a mighty beam of sound, waves of enormous frequency that battered at matter and tore it into its component atoms. In the white arena, the thin air above it was ripped asunder, energized until it gave off the blue light of the beam. Beside the pit lay the only mechanical device that we found in all the Crimson City—a plate of crystal vibrated by electrical energy, as we have done in the laboratories of Thula, setting up a wave of sound in itself destructive to life, and far beyond the range of the senses. By interference, the two waves merged into one, heterodyned as some would say, giving a lower note, the high thin wail of the blue shaft. This we discovered by experiment and by reasoning, but the source of the Blue Sound, somewhere far below the city, we could not imagine. Physical phenomenon, production of the vapor-things of something higher still than they—I shall never know which. We of Thula know only its nature, its resulting phenomena, and no more. Hektor—but Hektor cannot tell. Perhaps, as we thought by reason of its location, it was the deity of the things, or else their place of execution, if such could exist in such a race, but all was mere conjecture. And yet I think it was not entirely of these, but still more, even as the sapphire wonder of the Singing Ones. But I must go on.

HEKTOR, of late, often explored without me, delving down in the dark corridors beneath the city. Then, one day, he returned pale and strangely silent, with fear and guilt in his suddenly aged eyes. He refused to go out again, seemed to shun the open, where he might see and be seen by the vapor people. He would not speak to me of what he had seen, but once, as he muttered in his infrequent, uneasy sleep, I caught a few disjointed words that made me wonder and fear likewise. He mouthed the words hoarsly, and whispered cunningly to himself, his open eyes fixed on emptiness.

"The glory—the glory—ah, the white glory of light! I have seen it—seen it!—They do not know! They will not know, not for many days!—Hard. Hard, but brittle! Oh yes, *very* brittle—But they do not know! They must not! They will kill us! We must escape!—But we cannot, not from them.—Oh, I was mad, mad to fear, to strike, but I did not know, I thought it was as they are, soft and yielding, not brittle!—The glory! Ah, Zeus, I am afraid, afraid!"

He had found something wonderful, apparently, somewhere in the bowels of the city, something beautiful but fearful, and in mad terror had struck blindly, had smashed it. It was something of awful importance, something whose destruction meant our death as soon as it should be discovered—a god, perhaps, or something akin. And I was afraid, with Hektor, and waited for the day when they must discover his deed, and sweep in a thick cloud of fury toward us.

It came, a day of double horror to me. Again we were borne to the arena, again the white walls flowed black vapor, again close-fitting caps of mist enclosed our throbbing brains. But this time thoughts came to me, pictures, and I understood that for all this time these creatures of mist had been resting, feeding, storing up energy for the great final destruction.

I saw the narrow defile through the black cliffs, clouds of inky vapor billowing against the barrier of blue. I saw the spheres of flame form, saw the barrier flicker and fade, and the towers of safety fuse and flow. Then the army of the Things had poured out over the plain, circling the single frail wall of blue fire, trying it, seeking out its weakest spot with devilish cunning. They did not fear it, for energy is but food to their kind, but food in sudden excess is unsafe. The fort lay silent behind its girdle of white, against which the black flow of the hordes showed clearly. And now, hovering above the blasted rock of the defile, I saw an aero, one of our old aeros of Yzdral! *The upper world had come to our rescue!*

For a single instant my heart leaped wildly with joy, then sank in disgust and hate. For they of the aero were cowards, craven! Some new, powerful weapon they must have, else they had not come in so small an aero. It lay in their power to save us, save their own kin, men of their race, from the awful death of the vapor things! And they slunk in safety beyond the rim of the plain, fearing to risk their precious lives for others, afraid to trust in the judgment of those men of wisdom who had armed and sent them forth to conquer! Cowards all, unfit to bear the banner of Poseidon!

My mind turned in aversion, turned to the fortress, where a great sphere of opalescence was forming, sending forth little streamers of rose flame that melted into the blue barrier, and beat it down in a torrent of mingling, fusing fire. Over the helpless city poured the hosts of the Things, fusing it to a smoking mass of slag, then sucking forth its energy until it glistened white with frost. And now, with savage gladness in my heart, I saw

*The Quetzal was a bird, considered a deity or symbol of a deity by the Aztecs and Mayas. It is the national emblem of Guatemala, as the eagle is of the United States, or the lion of England.

the craven aero flee in sudden terror out across the swamp, the black mists swirling after!

Of a sudden the picture was blotted out, and angrily the mist folk tore at my mind. Into my brain flashed the truth. In victory they had sought that which Hektor had destroyed, had found it dead and shattered, had come to avenge! On the instant I was jerked high, Hektor beside me. Before me the mist bulked high, began to spin and thicken in the form of a great sphere. I felt the tearing at our senses, the plucking at our brains, the tensing of the vibrant atmosphere, and then the ball of flame burst forth in our very faces, not opalescent as before, but angry red, shot with little dazzling corruscations of electric blue. Nearly within the reach of my arm it hung, towering above us, a living ball of glorious flame, yet heatless, and pulsing with consuming hate and evil. From it leapt tiny ribbons of flame, narrow blue tentacles that streamed past me to where Hektor hung whimpering, and plucked him from his place. As he was hurled past me into the heart of the sphere, I could see his body alive with leaping, crackling blue fire, bathing him and sinking into him. Then he was gone, and the great sphere burst into blinding white light, as the angry drone of the vapor things rose to a frenzied *crescendo*. And then he was spewed forth, strangely rigid, into my grasp, as a man dead, yet filled with the hellish life of the Things.

The sphere was forming again, swiftly, the little blue streamers leaping from its whirling surface, then darting toward me. But even as they swept over me, the vibrant energy of them thrilling and surging in me, there came a rushing roar of mighty winds, and I was hurled high above the great bowl by the force of the tempest and borne along on the wings of the wind, Hektor clutched in my arms, the sphere of flame gone forever. For an instant I saw, advancing swiftly through the broken forest of fungi, a great wall of pale white water, dimly luminous, bearing down with awful speed upon the Crimson City! The sea had broken through the mountains! Then I was hurtling above the lashing jungle, all about me torn wisps of scudding black showing dim against the riddled clouds, borne by the terrible fury of the winds. My breath was sucked from my striving lungs by the tempest, and all the world dissolved in flame-shot blackness.

I woke in a welter of whipping waters, borne like a bit of drift from crest to trough, Hektor still lying rigid in my locked grip. A black hulk was silhouetted against the clouds, then rushed down upon us—one of the great living trees of the swamp. Vainly my weakened hands scrabbled at the leathery smoothness of the huge trunk, then, as it seemed about to plunge over me and beat me down into the pale water, my clawing fingers sank into one of the many great sores eaten by fungi into the otherwise unbroken trunk, sank deep and clung desperately. Slowly I began to raise Hektor, to lay his stiff body across the broad trunk of the tree and follow him to safety. And after an age it was done, and I sank again into sleep.

The waters were still when I awoke, rising and falling in long uneasy swells. Hektor lay beside me, motionless, his body set as in death, yet I could see the faint pulse of veins in his temple and hear the slow hiss of breath through clenched teeth. About us the milky sea ran endlessly away beneath the scudding clouds. The black crags were lost in distance, now, and beneath these troubled waters lay the drowned jungles of that unknown land beyond the Crimson City. The great tree on which we lay, too, was different from those that we had seen before. The slatey trunk and leathery skin-like bark were the same, but its tentacles were slenderer, more ribbon-like, and fitted with meshed clusters of filaments, like little nets, about the edge of the crimson sucking-cups. This tree must have fed in water that was flowing, bearing food into the net that it set. Its roots bore this out. They were stouter and less flexible than those of the swamp trees. Somewhere, then, the swamp must have an outlet, but where? Were we being borne into the chasm of this buried world?

For untold time we drifted, and it seemed to my troubled mind that the current had a definite set, that we were being carried to a certain death. And through all those fear-filled hours Hektor lay stiff and motionless beside me. Then, far before us appeared a low-slung mass, speeding in our direction, against the current! With every hour of pressing time it drew nearer, and I could see a great monster's head rising from a dully gleaming body, with flailing limbs on either side—a dragon of the sea! But even as I drew my sword, I saw a second figure standing where the neck of the monster joined its half-submerged body—a human figure, clad in glittering metal scales, with golden hair streaming free beneath a winged helm, and I knew him for what he was—a man of Thule!

CENTURIES ago, in the days of the First Planet, Thule and Atlantis shared the world, island Atlantis and Thule of the many gates—a mountain land, with myriad narrow arms of the sea breaking the precipitous coastline. From an ancient root, older than Man, comes the words that name them—Thula, city of the many portals; Thule, land of the many fjords. It was a northern land, where the sun often hung low above the grey sea for long week after week, and mountains of ice swept down the sea lanes from the pole—a hard land and the land of a hard race. For the men of Thule were savage, warriors all, and in their dragon ships, patterned after beasts of legend that no man now remembers, they swept the seas to the southward, bringing death and destruction with them. Upon Atlantis they fell, but the cunning of that race that had conquered Mu of the emerald isles and the barren uplands of the Yellow Ones was too great for their valor, and they fell before us. But the fathers of Atlantis were born old, and in their wisdom they forgave the bold men of the north and made them allies. We gave them of our culture, such as they could understand, and from the squalid savages rose a race of god-men—giants all, with flowing hair and beard of spun gold, and eyes keen and blue as good steel. When Thula came to the Second Planet, many were with us, and when the Overlords drove forth the degenerate people, the men of Thule went also, of their own will and purpose—no man knew whither, save perhaps that Quetzal who led the way.

The dragon ship rushed down upon us, and with a straining of oars hung still, like a falcon poised. Strong arms dragged us over the low gunwales, great hands, warriors' hands, gave me food and drink, and strove to force it upon Hektor, but in vain. And as we sped through the cresting sea, he who was their leader, Thorvald Nilsson told me the history of the men of Thule, after they left the upper world.

They had gone with Quetzalcoatl and his followers into the caverns where the race settled, but unlike them went onward and downward, to a narrow land beyond the white sea of the Underworld—a fertile land, lit by an everflowing river of molten rock, where real trees grew, and flowers, with beasts that their fathers had fought in the north of Thule in days long gone. And here they lived and launched their dragon ships in the strange white sea that lapped upon their bouldered beaches. In a single great fjord the pale-lit waters ran past the walls of rock that barred their pleasant land from the weird world of the Things. Long since they had found this unnatural land, and the black Things, and with them another race, of which he spoke but vaguely, the Singing Ones. They avoided these shores, but when the sea rushed down upon the Underworld, they were drawn into the mad maelstrom and spewed out upon the silent waters that hid the swamps and the Crimson City.

"I have seen such as he, before, O man of Yzdral," he said, "and some the Singing Ones have made whole again, but sometimes even they have failed. I think it will be wise to seek them, for if it be as ye have said, that this man has unveiled the secret of the Black Ones, such as remain will seek ye out for vengeance, and with the Singing Ones we will be safe. There is danger of the chasm, with this flood pouring through the gate, but we of Thule have never yet feared danger, nor ever will, and it comes to me that ye are not one to flinch."

And now we put about and ran with the current, save faster, for a long time, how long I cannot say, for our chronoscopes were gone and there was no night here. Even as Thorvald, I took my turn at the oars, strengthening my sickened muscles, or engaged in sword-play on the short forward deck, with the shouts of the rowers in my ears above the hiss of the waves and the oars. And always Hektor lay as dead, breathing slowly, his pulse a mere flicker, yet needless of food or drink, so great was the energy that the sphere of the Things had poured into him.

To north and south the mountains had appeared, drawing in from the low horizon in a great funnel into which the rushing waters poured. Now we had no need of oars, for the leaping waves bore us on with awful speed, the wind whipping our beards and hair and screaming in our ears. The oarsmen were resting, building strength for their final great struggle with the sea. Now the walls of black were narrowing faster, drawing together to form a great river of wanly flaming water, whose shores rose steep to the drooping clouds. At first miles in width, the rushing torrent swept down into a narrow channel bitten deep in the rock, barely a hundred feet across, in which the white waves leaped and boiled as in a cauldron, dashing high against the smooth-cut walls. Still no man took to the oars, except to save us from crashing into the walls, but as time passed I sensed a tensing, an awaiting for some last struggle for life or death. Above the howl of the wind in the gorge, and the lashing roar of angry water, rose a new sound, a drumming thunder, far distant and muffled by the echoing cliffs. And now Thorvald rose from his seat, where he had been idly gaming with dice, left hand against right, and strode to the guiding oar. As silently each man took his seat, and rubbed into his palms the rosin that assured his grip on the oars. The great oars rose, and swung forward, lying against the hull, ready to plunge and strike. At a sign from Thorvald I dragged Hektor to a spot just under the sweeping dragon's * neck, and lashed him there with leather thongs, then joined the chieftain at the steering oar.

The drumming rose louder now, drowning out all else in its thunderous roar. Thorvald raised to his lips the great brazen horn of chieftainship, and gazed down the mist-filled gorge, waiting. And now, through the luminous spray, I saw that two mighty peaks jutted out from either wall, between them a boat's length of space through which the raging waters surged and battled, rising high, then leaping out, out and down into nothingness. Through the curtain of water, the twin crags loomed bare and smooth from the torrent's edge, the left jet black, the right—it seemed—a flaming gold. Then the great horn blared forth its message, the oars struck deep, and for an instant we hung checked in our mad course, held by the straining oars, then swept on with the flood. Again and again they plunged, each mighty blow bringing us up as against a yielding wall, each time hurtling on as before. And now we thrust with all our weight at the great helm, driving it slowly against the leaping stream. Now with each giant beat of the oars, I could see the rushing wall to the right creep closer and ever closer. The oars beat faster now, in perfect rhythm, and the struggling helm battered fiercely at our strength. Now I could hear above the tumult of waters a chant of human voices, raised in a song of battle, and I joined my voice to theirs in the stirring anthem of Yzdral.

Before us the bounding waves climbed up and up, a hundred feet or more above our heads, battering at the crevice that overhung the great abyss. Great waves broke over us, not salt, but sickly sweet and filled with a fungoid savor, beating at us in great masses of leaping white fire that swooped down from the tossing clouds. And still the oars struck firm and sure, and the helm crept slowly to the right. Fiery darts of pain shot through my straining muscles, and I saw Thorvald's teeth gripped in his lower lip, blood streaming into his matted beard. And now the cauldron fell away beneath, and the dragon ship hung high above the abyss into which the waters thundered, down and out and down again into the endless depths where pale-lit mists swirled slowly with dreamy lethargy. For an instant we poised there, an eternal instant of reminiscence and despair in which all the forgotten faces of childhood spun before me in a slow, dead whirl. Then like a gyrfalcon we swooped through empty air, down and down into sudden-silence, the howling waters but a lost murmur in the distance, lulling, lulling our tired muscles into sleep. No longer did we plunge madly through the blazing waves, but rocked in a gentle swell, a soft blue light seeping through the perfumed air about us—surely the Paradise of death. Thorvald beside me, I drifted off into velvet darkness.

I WOKE to the gentle grip of Thorvald's hand. The oarsmen were gone, and he stood silhouetted against a soft blue luminescence that played in little dancing wavelets from the ceiling of the great cave in which we floated. Now I realized the truth of what had happened. The mountain on the right was hollow, and in the very center of the narrow gap, through which the waters leaped, opened the arched gateway into which

*The old vikings of Scandinavia called their warships dragons. They often had a dragon's head on the bow.

we had passed with that final thrust of oars, down into the calm, slowly eddying lagoon beneath the mountain. Ordinarily, when the river merely drained the stagnant swamp, it must be difficult enough to enter, but now, with a sea pouring through that cranny between the peaks, it was by little short of superhuman skill and strength that these men of Thule had won us through.

We lay beside a smooth black pier, jutting from the wall of the cave. The cave itself was low-roofed and broad, stretching out into the blue haze on either side. Here a great niche had been cut into the wall, fronted with pillars that glowed with little inlaid twinings of soft gold. From it opened many corridors, running off into the mountain, and a broad stair, rising into the peak above us. It was lit by the blue light, and rose easily in lazy spirals through the black rock of the peak. All along the walls ran the delicate golden inlay, much like the fretting of the ventilators of our upper world, but more gentle and beautiful, patterned after the twining vines and tendrils of some unknown vegetation. Up this we strode, bearing Hektor between us, Thorvald seemingly familiar with the way. Glancing down at the steps, I could see that they were worn, and the edges rounded by much use during long ages. What people had carved this stronghold in the heart of the mountain? Who were the Singing Ones?

The peak was conical, and as we rose the stair drew near the outer wall and the roar of the fall sounded far below. At last came a landing and a niche in the wall. a little alcove from which we might see the river far beneath us. Up from the leaping flood rose the black cliff, sloping inward in mirror image of that which loomed opposite. And above and about us, rising in terraced levels, clung the Golden City of the Singing Ones.

In level after level of blunt-topped golden towers the city rose above us, circling the cone of the peak. Smooth from the crag the outer wall would rise, to a series of little steps, in reality broad terraces, dwarfed by distance, then up again in a slender golden block to a blunt, terraced summit. Balconied windows opened from the smooth, golden wall, looking out over the river and the abyss into which it plunged, feathering into luminous mist that drifted up through the thin air to the low-hanging clouds that clung about the summit of the peak. On the terraces, and in the broad ways between the ranks of buildings grew trees and flowers, climbing in perfumed profusion over the golden fretting of the inner walls. And like a halo over the city clung the blue light, illuminating everything with its soft azure. What manner of men could these Singing Ones be, to raise such a city on the crag, and make trees and flowers bloom in this unhealthy Underworld?

Now, as we climbed higher, I heard a music flooding from above, a music as of organ notes, deep and brooding, spangled with merry piping and silvery tinkling of little bells. Then the stair turned suddenly and stopped, and I followed Thorvald out upon a high dais of gold, bearing Hektor.

Before me, the golden amphitheater was filled with light, light such as I had never seen. It lay on the border line between light and mist, both and yet neither. It was of a rose-hue, a faintly flushed pink, with little veinings of scintillant silver. In a great motionless flood it lay in the bowl of the amphitheater, pulsing dreamily. Through it ran tiny filaments of clotted coral flame, glittering mischievously through the soft glow, darting and twisting through the surge of rose-light. The glow of it lit up all the golden temple with rosy glory, brighter and softer than the green light of the upper world. For an instant I thought of the snowy bowl of the vapor things, but this was different. Here was not clinging, creeping vapor, dank, black fog, that clogged the senses with loathing and bound the muscles with invisible resistance. This light was free, clean, beautiful, vibrant with pure life, whetting the senses and cleansing the mind of the ugly darknesses that lurk in its hidden corners. And now, as the deep organ note throbbed behind me, and the bowl of light rippled in thrilling answer, trilling piping and little elfish bugle notes, fairy fiddling and little silvery carillon, I knew that the Singing Ones lay before me, and I thought of the words of him to whom I had gone, a child, for vengeance upon the black Things of the Underworld.

"Cleon, if your judgment falters in the future which must come, heed my advice. Place your trust in that which you see as wholly beautiful."

And in the Singing Ones I found beauty, though I had come to hate and fear all creatures of the mist by reason of the Black Things. In these there was a purity, a clean virulent airiness that reassured me, though of necessity they must be fundamentally of the stuff of the mist folk, living, moving as they, perhaps sprung from the same hidden root. I stepped to the brink of the dais, and laid Hektor in the glowing flood of light that lapped at its brink. Slowly he sank into the rosy depths where the little threads of silver were clustering in a scintillant net that dropped softly about him, hiding him from my sight. Thorvald's hand was on my arm, his voice in my ear, and in obedience I also let myself drop into the pool of light and drift down through the silent depths. Weariness and the fatigue of strained muscles faded away, leaving peace and dreamy languor. I was purged of the horror I had seen and felt, made new and clean by the fingers of light that were gently wafted through my brain. And with Thorvald at my side, I drifted dreamily to where the little filaments of coral flame were grouping, dancing, beckoning eagerly. They surged up about me, folded over my head in a living net of flame, and through my body ran a leaping fire of vibrant energy, renovating me, charging me with life and joy and health, such as I had not felt for many years. Here was the alliance that made gods of the warriors of Thule!

Out on the golden dais we were laid, Thorvald and I, while from the bowl of light came a sad murmur of ethereal music, regretful, apologetic. Up from the pool swam the globe of silver threadings, up to our very feet. It opened, like a great bud unfolding, and there as in a cradle nestled Hektor, sleeping. He stirred, and woke, but in his eyes was not that which I sought. Consciousness was his, now, and the will to live, but not in our world. He moved and saw and felt in some higher plane, in the plane of the Black Things.

Thorvald spoke. "Do not despair, O Cleon. He was far gone. I feared it would be thus—I have seen men so before, after the flame-kiss of the Black Ones. He lives, as we, but in their world. There is yet a hope, Cleon. I have seen it—once—applied only in direst extreme. If it should succeed, he would be ever such as you see him now, but of these Singing Ones, and free of the Black Ones forever. I think—they will try it. They are very kind. And you must give of your strength willingly."

Hektor rose to his feet, stalked past us as in a dream. After him poured the flood of rose light, enveloping us, carrying us up with it. I saw now the source of the organ notes, those to which the Singing Ones responded. Like a mighty sapphire, faceted and jeweled, yet of yielding blue glory, midway between light and flame, it floated —father, ruler, god of these Singing Ones. About it clustered the rose light, baring us in its midst, forming a great halo about the blue jewel of flame. I touched it, felt it full of a warmth and a great life, with infinite understanding, and into my mind came the thought of that which Hektor had destroyed in the Crimson City—perhaps its counterpart in the life of the black Vapor Creatures, and I had more of sympathy for that race which had lost its god.

Far below, on the dais, Hektor stood like a statue of marble, face upturned to the light. Now from the sapphire globe burst a fountain of silver flame, falling in mist about him, then thickening to a rain of flashing silver that flooded over him from head to foot. And there came a yearning in me, a longing to unite my strength and life with the life of the Singing Ones, pouring them out in the silver flame that meant life and safety to him below. Thicker and thicker poured the rain of silver, cascading over him in great waves and sinking into him. Then he began to rise from the golden floor, and the silver flood ceased as he drew near, and I saw in his dreaming eyes the presence of the Singing Ones. With the rose mist he swept from the temple, and I stood with Thorvald above the empty bowl, watching the life ebb from the golden hall. Then all were gone, and we went wearily down the corridor to the hall where the oarsmen waited.

DURING the days that followed, there was little to do but roam the golden city or gaze over the side of the mountain at the flood that still roared beneath. Thorvald said that a deep, narrow channel had been cut through the mountains and out into the sea, how we could not imagine, and that through it the water of the sea was pouring into the swamp and then into the abyss. But the sea was large, and the channel narrow, and it would be long before the men of Thule might venture homeward once more. There were many in that golden city, like Hektor, living as men, yet part of that people of rose light that were the Singing Ones. Through the streets and garden they wandered, a great peace and knowledge in their quiet eyes, and I could not but envy them at times.

I could not but wonder at these folk of light. Here, even more than in the mist creatures, were my three criteria of perfection in life satisfied. In the mist creatures, the transformation of energy was efficient far beyond all our hopes and dreams, but there was always something artificial about it, something of unnatural strain, while here the light had gathered, the silver rain had descended all with perfect spontaneity that was beyond my ability to comprehend, smooth and effortless as —light. In the black mist there was unity beyond all leagues of Man, but the limits of the individual were still evident. One could see the difference at once. In the Crimson City, the black mist flowed about in isolated gouts of vapor, unified only in time of great stress. Here, the golden walls and paving glowed through a veiling haze of rose and silver, everywhere from lowest to highest level, and ever continuous, one with all its parts, yet a people rather than a single creature. Lastly, the Purpose of the Things, whatever it might be, was at odds with all the world except itself, alien to the races that shared the Universe with it. But these people of light were in perfect harmony with the chord that underlies Nature, the basic chord of beauty and symmetry, great or tiny, majestic or ethereal, that vibrates in harmony with the fundamentals of Space and Time. Sometimes, I felt that they were not merely a single race, but that in them all the other races met in common sympathy and understanding, as one race, perhaps —as Life itself.

And I thought of the varied races that I knew—of Man, and of the creatures of the outer world that I had seen, birds, and insects, and brilliant fishes, of the great flesh-hulks of the marshes that my father had shown to me, of the horridly living jungle in the Underworld, and last, of these two topmost races—the Vapor Creatures and the Singing Ones. Where did all these fit into the Purpose that day by day Man is dragging from the secrets of the Universe? How did they fit into the underlying unity that must ultimately envelop all things, when Man shall have the mind to comprehend it? I felt that these Singing Ones were closer to it now than we. They did not strive with machines and delicate experiments to catalogue the Universe, to name and classify all that came within their experience, for that is the way of Man. Slowly, painstakingly we climbed the steep path, step by faltering step, slipping and stumbling, halting to impress every pebble and grain of sand, every grass-blade along the way in our memory, that when the summit is at last reached, Man may stand and look back into the memory of his race, and see all the infinite mosaic of law and chance that is the Pattern of the Universe, unified before him. So Man moves to his ultimate height, and so no other race moves while Man lives.

But these folk of light, and they of the black vapor, had no machines that Man could name so, no massive tomes of data such as Man could understand. Their ways were different, from ours and from each other, as are all ways, in my belief. Both, it seemed, absorbed the Universe into themselves, but not in the same way. For the Black Things sucked out the life of what they met, destroyed it utterly and horribly, while the Singing Ones *gave* life where it was needed, out of themselves, and profited and progressed by it, how I cannot tell, except that their way was the way of beauty. I am old, and to the old comes something of insight and philosophizing, but I am a man, and Man's way must needs be mine—the painful, halting climb that knows few leaps of all-enveloping insight. I cannot be otherwise, though with Hektor—I cannot tell.

For long, while the torrent waned beneath the crag of the Golden City, I had been awaiting the vengeance of the Black Ones. Come it must, and I felt that this would mark a crisis in their cause, for all their race must needs be flung into the battle. Strange, how a little thing can break the sway of a mighty race, as once tiny hairy mammals, new evolved and untried by time, found welcome food in the buried eggs of those great reptiles that once ruled the planet, and brought that giant race crashing to the ground in defeat. Hektor was such as they.

I had feared the coming of the Things, yet when that ominous cloud of black billowed sluggishly down the narrow gorge, I was strangely calm and unconcerned.

I felt then that they could not win, that it was written in the equation of their life.

From the topmost turret of the golden city we watched, Thorvald and I, the oarsmen crowding around us with flashing eyes to see the battle. Far below, lining the terraces in silent expectation, were those who, like Hektor, had come under the silver rain. Above us, all about us, enveloping all the city in a glorious haze of rose light, the Singing Ones floated, their voice a thrilling clamor of bugles presaging victory. And up from the heart of the city, blending with their bugling, rose the organ-song of the sapphire globe, triumphant and exultant.

Now the Black Ones had encircled the crag with their dense, black clouds, and were rising toward the city. And below, at the lowest ramparts, the halo of light spread and thickened, its rose-flush deepening with the little darting tongues of thrilling flame. In the uneasy ranks of black the spheres of opalescence were forming, small, then swelling into sudden fiery brilliance, huger by far than what I had ever seen. They were spinning now, faster and ever faster, the wind whining furiously from their contact. And still the rose deepened, and I could see the flickering web of silver that laced its heart.

Now the spheres were still, tensing for the attack. Even beneath the protecting halo of light we felt the strain, tugging at Space itself, gaining strength from the deformation of the Universe to loose its fusing thunderbolts of flame. As before, it mounted until the mind seemed drawn to breaking. And then the tension snapped, and from the myriad opal spheres leapt the tongues of searing flame, hurtling straight at the guardian halo, crashing against that wall of soft rose light—and vanishing! Faster, thicker they came, with a sort of frantic fury! Now the black mist was gone entirely, drawn into the opal spheres, and the place below had become a maelstrom of battling flame! Leaping, meshing, twining in a tangled maze of fire, the fury of the spheres battered at the city, faster, ever faster and more furiously, until the eye could not follow their dancing in the sea of flame! Yet the barrier halo of light still clung unharmed about the city, drinking in the mad fire that hammered in mighty bolts and streamers at its surface, dissolving them utterly, with no sign of stress or battle save the slow deepening of the rose as the flames poured into it. I cannot say how long the fray went on. The rose had swelled to a burning scarlet, shot with great pulsing arteries of silver, when high above us throbbed the organ note of the sapphire globe, imperative, commanding. And in reply, the rose mist whispered, low and sweet and far off, laughing and triumphant, with a little tingling trill running through the soft soughing. The globe burned with a dazzling blue, now, and from it cascaded the torrents of silver light, flooding down over the sea of fire beneath! And where it struck the spheres, they dissolved, and were gone in a thin green mist that drifted slowly out over the gorge and they were swallowed up by the leaping spray. The Black Ones were forever dead!

THERE is little more to tell of the Singing Ones. Once more, just before our oars bore us again up the shallow stream, now free of the pouring waters of the pale sea, we bathed in the rose light, which was filling us with the fiery energy that had come from the Black Ones. Slowly up the stream we went, and over the still flooded swamps where drowned and rotting tree-things were rising from the settling water, to a deep inlet that ran far into the mountains and a great cavern gaped through to the pale sea. Over the level cavern floor we bore the dragon ship, pushed on rollers by the oarsmen, and down the sloping, wave-worn bed of the sea to the restless waters. Skirting the rocky shore, we passed the channel that had been burned into the black rock beneath the shattered crystal valve under Luda, the luminous white water still lipping into its smooth groove. Then we struck straight out into the pale sea whose lowering roof came slowly down as though to crush us, until we rowed blindly through the clinging mists that blanketed the waters with weird fire. Now and again some monster of long-gone time broke the surface, throwing up a luminous spray toward the flashing clouds. By what reckoning, what instinct, we were guided I cannot tell, but after many weary hours the rocky walls of the cavern closed in on either hand to a high-walled narrow fjord running back mile on mile into the heart of the cliff, then opening into the vaulted cavern of the men of Thule.

About the shores of a quiet lagoon clustered the low, thatched homes of stone where lived the race of Thorvald. Before each hall, drawn high on the pebbled beach, lay a dragon ship, marked with the shield of the clan which dwelt in the granite hall beyond. Up from the cluster of houses ran waving upland meadows of wheat and rye, while green forests showed beyond. Gnarled and leafy, they ran up the flanks of the great fire-mountain which gave light to this new Thule, its time-worn precipices aflame with a white-hot river of molten rock, flowing in great cascades to finally pour into the bowels of the planet through a great oval pit above the little city. Here among the kinsmen of Thorvald, in his high-raftered hall of granite, I lived and hunted with them the strange beasts of the land beyond the fiery mountain, beasts such as the old books tell of, mountains of flesh with long, recurving tusks and great flailing trunks, smaller beasts with horns upon their snouts, and little red eyes, great dun cats with sword-like teeth—things that had been in Thule in the days of the First Planet, when men first fought there.

But at last I grew weary, and longed to see again the lands of the surface, Yzdral, and Kor, and Thula. With Thorvald for guide, and ten brawny men of Thule to aid us, we went up and through shadowy caverns of crystal where no life was save ourselves. More than a year we climbed, fed by the stores hid long ago by the forefathers' race, food preserved in the cunning way of Thule. The way was steep and smooth, smoothed by the hand of Man in ages past, and here and there stone bridges spanned a chasm, or bronze ladders scaled the vertical precipice of a mighty fault, or strong gates barred the way. I recognized here the hand of that Prince of Quetzal who reared the inner cities for the banished people of Atlantis and gave aid to them of Thule, who were his friends.

And then the inner caverns! Not far from squat Kor of the lava-plain we emerged from the chasm that marked the end of the way, and in that dead, dust-silenced city found an aero to carry us to the surface. As one long dead, Thula greeted me, and Thorvald as a dream of the past. Even as he had feasted me in Thule,

(*Continued on page 343*)

The Jameson Satellite

By Neil R. Jones

THE mammoths of the ancient world have been wonderfully preserved in the ice of Siberia. The cold, only a few miles out into space, will be far more intense than in the polar regions and its power for preserving the dead body, therefore, would most probably be correspondingly enhanced. When the hero-scientist in this story knew he must die, he conceived a brilliant idea for the preservation of his body, the result of which even exceeded his expectations. What, how and why are cleverly told here.

Illustrated by MOREY

PROLOGUE

The Rocket Satellite

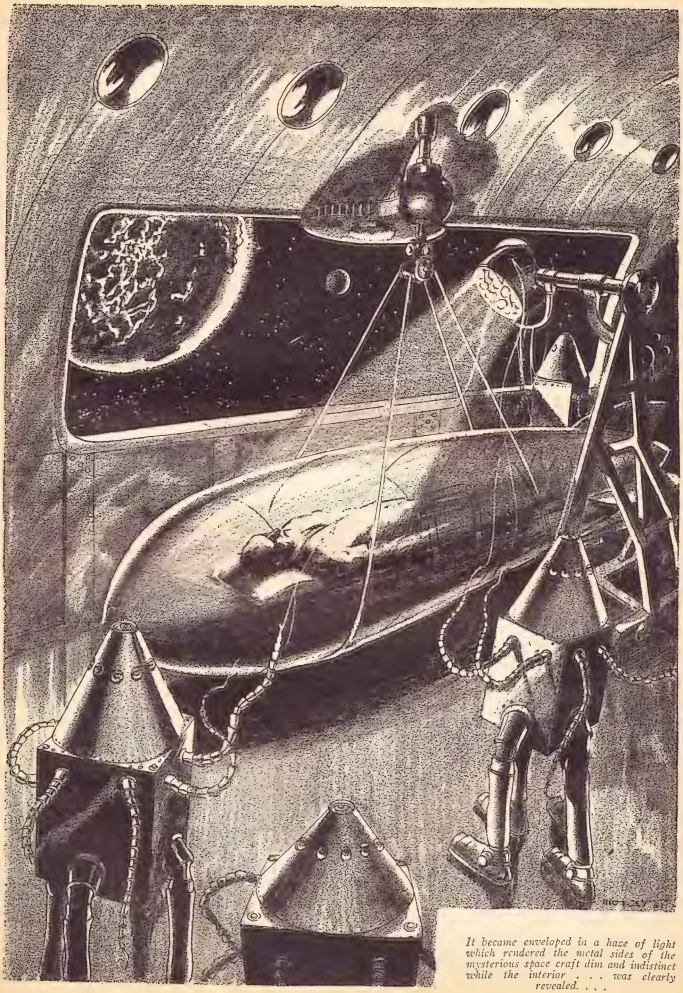
IN the depths of space, some twenty thousand miles from the earth, the body of Professor Jameson within its rocket container cruised upon an endless journey, circling the great sphere. The rocket was a satellite of the huge, revolving world around which it held to its orbit. In the year 1958, Professor Jameson had sought a plan whereby he might preserve his body indefinitely after his death. He had worked long and hard upon the subject.

Since the time of the Pharaohs, the human race had looked for a means by which the dead might be preserved against the ravages of time. Great had been the art of the Egyptians in the embalming of their deceased, a practice which was later lost to humanity of the ensuing mechanical age, never to be rediscovered. But even the embalming of the Egyptians, so Professor Jameson had argued, would be futile in the face of millions of years, the dissolution of the corpses being just as eventual as immediate cremation following death.

The professor had looked for a means by which the body could be preserved perfectly forever. But eventually he had come to the conclusion that nothing on earth is unchangeable beyond a certain limit of time. Just as long as he sought an earthly means of preservation, he was doomed to disappointment. All earthly elements are composed of atoms which are forever breaking down and building up, but never destroying themselves. A match may be burned, but the atoms are still unchanged, having resolved themselves into smoke, carbon dioxide, ashes, and certain basic elements. It was clear to the professor that he could never accomplish his purpose if he were to employ one system of atomic structure, such as embalming fluid or other concoction, to preserve another system of atomic structure, such as the human body, when all atomic structure is subject to universal change, no matter how slow.

He had then soliloquized upon the possibility of preserving the human body in its state of death until the end of all earthly time—to that day when the earth would return to the sun from which it had sprung. Quite suddenly one day he had conceived the answer to the puzzling problem which obsessed his mind, leaving him awed with its wild, uncanny potentialities.

He would have his body shot into space enclosed in a rocket to become a satellite of the earth as long as the earth continued to exist. He reasoned logically. Any material substance, whether of organic or inorganic origin, cast into the depths of space would exist indefinitely. He had visualized his dead body enclosed in a rocket flying off into the illimitable maw of space. He



It became enveloped in a haze of light which rendered the metal sides of the mysterious space craft dim and indistinct while the interior . . . was clearly revealed. . . .

would remain in perfect preservation, while on earth millions of generations of mankind would live and die, their bodies to molder into the dust of the forgotten past. He would exist in this unchanged manner until that day when mankind, beneath a cooling sun, should fade out forever in the chill, thin atmosphere of a dying world. And still his body would remain intact and as perfect in its rocket container as on the day of the far-gone past when it had left the earth to be hurled out on its career. What a magnificent idea!

At first he had been assailed with doubts. Suppose his funeral rocket landed upon another planet or, drawn by the pull of the great sun, were thrown into the flaming folds of the incandescent sphere? The rocket might continue on out of the solar system, plunging through the endless seas of space for millions of years, to finally enter the solar system of some far off star, as meteors often enter ours. Suppose his rocket crashed upon a planet, or the star itself, or became a captive satellite of some celestial body?

It had been at this juncture that the idea of his rocket becoming the satellite of the earth had presented itself, and he had immediately incorporated it into his scheme. The professor had figured out the amount of radium necessary to carry the rocket far enough away from the earth so that it would not turn around and crash, and still be not so far away but what the earth's gravitational attraction would keep it from leaving the vicinity of the earth and the solar system. Like the moon, it would forever revolve around the earth.

He had chosen an orbit sixty-five thousand miles from the earth for his rocket to follow. The only fears he had entertained concerned the huge meteors which careened through space at tremendous rates of speed. He had overcome this obstacle, however, and had eliminated the possibilities of a collision with these stellar juggernauts. In the rocket were installed radium repulsion rays which swerved all approaching meteors from the path of the rocket as they entered the vicinity of the space wanderer.

The aged professor had prepared for every contingency, and had set down to rest from his labors, revelling in the stupendous, unparalleled results he would obtain. Never would his body undergo decay; never would his bones bleach to return to the dust of the earth from which all men originally came and to which they must return. His body would remain millions of years in a perfectly preserved state, untouched by the hoary palm of such time as only geologists and astronomers can conceive.

His efforts would surpass even the wildest dreams of H. Rider Haggard who depicted the wondrous, embalming practices of the ancient nation of Kor in his immortal novel, "She," wherein Holly, under the escort of the incomparable Ayesha, looked upon the magnificent, lifelike masterpieces of embalming by the long gone peoples of Kor.

With the assistance of a nephew, who carried out his instructions and wishes following his death, Professor Jameson was sent upon his pilgrimage into space within the rocket he himself had built. The nephew and heir kept the secret forever locked in his heart.

GENERATION after generation had passed upon its way. Gradually humanity had come to die out, finally disappearing from the earth altogether. Mankind was later replaced by various other forms of life which dominated the globe for their allotted spaces of time before they too became extinct. The years piled up on one another, running into millions, and still the Jameson Satellite kept its lonely vigil around the earth gradually closing the distance between satellite and planet, yielding reluctantly to the latter's powerful attraction.

Forty million years later, its orbit ranged some twenty thousand miles from the earth while the dead world edged ever nearer the cooling sun whose dull, red ball covered a large expanse of the sky. Surrounding the flaming sphere, many of the stars could be perceived through the earth's thin, rarefied atmosphere. As the earth cut in slowly and gradually toward the solar luminary, so was the moon revolving ever nearer the earth appearing like a great gem in the twilight sky.

The rocket containing the remains of Professor Jameson continued its endless travel around the great ball of the earth whose rotation had now ceased entirely—one side forever facing the dying sun. There it pursued its lonely way, a cosmic coffin, accompanied by its funeral cortege of scintillating stars amid the deep silence of the eternal space which enshrouded it. Solitary it remained except for the occasional passing of a meteor flitting by at a remarkable speed on its aimless journey through the vacuum between worlds.

Would the satellite follow its orbit to the world's end or would its supply of radium soon exhaust itself after so many eons of time, converting the rocket into the prey of the first large meteor which chanced that way? Would it some day return to the earth as its nearer approach portended, and increase its acceleration in a long arc to crash upon the surface of the dead planet? And when the rocket terminated its career, would the body of Professor Jameson be found perfectly preserved or merely a crumbled mound of dust?

CHAPTER I

40,000,000 Years After

ENTERING within the boundaries of the solar system, a long, dark, pointed craft sped across the realms of space towards the tiny point of light which marked the dull red ball of the dying sun which would some day lie cold and dark forever. Like a huge meteor it flashed into the solar system from another chain of planets far out in the illimitable Universe of stars and worlds, heading towards the great red sun at an inconceivable speed.

Within the interior of the space traveler, queer creatures of metal labored at the controls of the space flyer which juggernauted on its way towards the far off solar luminary. Rapidly it crossed the orbits of Neptune and Uranus and headed sunward. The bodies of these queer creatures were square blocks of a metal closely resembling steel, while for appendages, the metal cube was upheld by four jointed legs capable of movement. A set of six tentacles, all metal, like the rest of the body, curved outward from the upper half of the cubic body. Surmounting it was a queer shaped head rising to a peak in the center and equipped with a circle of eyes all the way around the head. The creatures, with their mechanical eyes equipped with metal shutters, could see in all directions. A single eye pointed directly up-

ward, being situated in the apex of the peaked head, resting in a slight depression of the cranium.

These were the Zoromes of the planet Zor which rotated on its way around a star millions of light years distant from our solar system. The Zoromes, several hundred thousand years before, had reached a stage in science, where they searched for immortality and eternal relief from bodily ills and various deficiencies of flesh and blood anatomy. They had sought freedom from death, and had found it, but at the same time they had destroyed the propensities for birth. For several hundred thousand years there had been no births and few deaths in the history of the Zoromes.

This strange race of people had built these mechanical bodies, and by operation upon one another had removed their brains to the metal heads from which they directed the functions and movements of their inorganic anatomies. There had been no deaths due to worn out bodies. When one part of the mechanical men wore out, it was replaced by a new part, and so the Zoromes continued living their immortal lives which saw few casualties. It was true that, since the innovation of the machines, there had been a few accidents which had seen the destruction of the metal heads with their brains. These were irreparable. Such cases had been few, however, and the population of Zor had decreased but little. The machine men of Zor had no use for atmosphere, and had it not been for the terrible coldness of space, could have just as well existed in the ether void as upon some planet. Their metal bodies, especially their metal encased brains, required a certain amount of heat even though they were able to exist comfortably in temperatures which would instantly have frozen to death a flesh-and-blood creature.

The most popular pastime among the machine men of Zor was the exploration of the Universe. This afforded them a never ending source of interest in the discovery of the variegated inhabitants and conditions of the various planets on which they came to rest. Hundreds of space ships were sent out in all directions, many of them being upon their expeditions for hundreds of years before they returned once more to the home planet of far off Zor.

This particular space craft of the Zoromes had entered the solar system whose planets were gradually circling in closer to the dull red ball of the declining sun. Several of the machine men of the space craft's crew, which numbered some fifty individuals, were examining the various planets of this particular planetary system carefully through telescopes possessing an immense power.

These machine men had no names and were indexed according to letters and numbers. They conversed by means of thought impulses, and were neither capable of making a sound vocally nor of hearing one uttered.

"Where shall we go?" queried one of the men at the controls questioning another who stood by his side examining a chart on the wall.

"They all appear to be dead worlds, "4R-3579" replied the one addressed, "but the second planet from the sun appears to have an atmosphere which might sustain a few living creatures, and the third planet may also prove interesting for it has a satellite. We shall examine the inner planets first of all, and explore the outer ones later if we decide it is worth the time."

"Too much trouble for nothing," ventured 9G-721. "This system of planets offers us little but what we have seen many times before in our travels. The sun is so cooled that it cannot sustain the more common life on its planets, the type of life forms we usually find in our travels. We should have visited a planetary system with a brighter sun."

"You speak of common life," remarked 25X-987. "What of the uncommon life? Have we not found life existent on cold, dead planets with no sunlight and atmosphere at all?"

"Yes, we have," admitted 9G-721, "but such occasions are exceedingly rare."

"The possibility exists, however, even in this case," reminded 4R-3579, "and what if we do spend a bit of unprofitable time in this planetary system—haven't we all an endless lifetime before us? Eternity is ours."

"We shall visit the second planet first of all," directed 25X-987, who was in charge of this particular expedition of the Zoromes, "and on the way there we shall cruise along near the third planet to see what we can of the surface. We may be able to tell whether or not it holds anything of interest for us. If it does, after visiting the second planet, we shall return to the third. The first world is not worth bothering about."

THE space ship from Zor raced on in a direction which would take it several thousand miles above the earth and then on to the planet which we know as Venus. As the space ship rapidly neared the earth, it slackened its speed, so that the Zoromes might examine it closely with their glasses as the ship passed the third planet.

Suddenly, one of the machine men ran excitedly into the room where 25X-987 stood watching the topography of the world beneath him.

"We have found something!" he exclaimed.

"What?"

"Another space ship!"

"Where?"

"But a short distance ahead of us on our course. Come into the forepart of the ship and you can pick it up with the glass."

"Which way is it going?" asked 25X-987.

"It is behaving queerly," replied the machine man of Zor. "It appears to be in the act of circling the planet."

'Do you suppose that there really is life on that dead world—intelligent beings like ourselves, and that this is one of their space craft?"

"Perhaps it is another exploration craft like our own from some other world," was the suggestion.

"But not of ours," said 25X-987.

Together, the two Zoromes hastened into the observation room of the space ship where more of the machine men were excitedly examining the mysterious space craft, their thought impulses flying thick and fast.

"It is very small!"

"Its speed is slow!"

"The craft can hold but few men," observed one.

"We do not yet know of what size the creatures are," reminded another. "Perhaps there are thousands of them in that space craft out there. They may be of such a small size that it will be necessary to look twice before finding one of them."

"We shall soon overtake it and see."

"I wonder if they have seen us?"

"Where do you suppose it came from?"

"From the world beneath us" was the suggestion.

"Perhaps."

CHAPTER II

The Mysterious Space Craft

THE machine men made way for their leader, 25X-987, who regarded the space craft ahead of them critically.

"Have you tried communicating with it yet?" he asked.

"There is no reply to any of our signals," came the answer.

"Come alongside of it then," ordered the commander. "It is small enough to be brought inside our carrying compartment, and we can see with our penetration rays just what manner of creatures it holds. They are intelligent, that is certain, for their space ship implies as much."

The space flyer of the Zoromes slowed up, as it approached the mysterious wanderer of the cosmic void, which hovered in the vicinity of the dying world.

"What a queer shape it has," remarked 25X-987. "It is even smaller than I had previously calculated."

A rare occurrence had taken place among the machine men of Zor. They were overcome by a great curiosity which they could not allow to remain unsatiated. Accustomed as they were to witnessing strange sights and stranger creatures, meeting up with weird adventures in various corners of the Universe, they had become hardened to the usual run of experiences, which they were in the habit of encountering. It took a great deal to arouse their unperturbed attitudes. Something, however, about this queer space craft had gripped their imaginations, and perhaps a subconscious influence asserted to their minds that here they were to come across an adventure radically unusual.

"Come alongside it," repeated 25X-987 to the operator as he returned to the control room and gazed through the side of the space ship in the direction of the smaller cosmic wanderer.

"I'm trying to," replied the machine man, "but it seems to jump away a bit every time. I get within a certain distance of it. Our ship seems to jump backward a bit too."

"Are they trying to elude us?"

"I don't know. They should pick up more speed if that is their object."

"Perhaps they are now progressing at their maximum speed and cannot increase their acceleration any more."

"Look!" exclaimed the operator. "Did you see that? The thing jumped away from us again!"

"Our ship moved also," said 25X-987. "I saw a flash of light shoot from the side of the other craft as it jumped."

Another machine man now entered and spoke to the commander of the Zorome expedition.

"They are using radium repellent rays to keep us from approaching," he informed.

"Counteract it," instructed 25X-987.

The man left, and now the machine man at the controls of the craft tried again to close with the mysterious wanderer of the space between planets. The effort was successful, and this time there was no glow of repulsion rays from the side of the long, metal cylinder.

They now entered the compartment where various objects were transferred from the depths of space to the interplanetary craft. Patiently they waited for the rest of the machine men to open the side of their space ship and bring in the queer, elongated cylinder.

"Put it under the penetration ray!" ordered 25X-987. "Then we shall see what it contains!"

The entire group of Zoromes were assembled about the long cylinder, whose nickel-plated sides shone brilliantly. With interest they regarded the fifteen-foot object which tapered a bit towards it base. The nose was pointed like a bullet. Eight cylindrical protuberances were affixed to the base while the four sides were equipped with fins such as are seen on aerial bombs to guide them in a direct, unswerving line through the atmosphere. At the base of the strange craft there projected a lever, while in one side was a door which apparently opened outward. One of the machine men reached forward to open it but was halted by the admonition of the commander.

"Do not open it yet!" he warned. "We are not aware of what it contains!"

Guided by the hand of one of the machine men, a series of lights shone down upon the cylinder. It became enveloped in a haze of light which rendered the metal sides of the mysterious space craft dim and indistinct while the interior of the cylinder was as clearly revealed as if there had been no covering. The machine men, expecting to see at least several, perhaps many, strange creature moving about within the cylinder, stared aghast at the sight they beheld. There was but one creature, and he was lying perfectly still, either in a state of suspended animation or else of death. He was about twice the height of the mechanical men of Zor. For a long time they gazed at him in silence of thought, and then their leader instructed them.

"Take him out of the container."

The penetration rays were turned off, and two of the machine men stepped eagerly forward and opened the door. One of them peered within at the recumbent body of the weird looking individual with the four appendages. The creature lay against a luxuriously upholstered interior, a strap affixed to his chin while four more straps held both the upper and lower appendages securely to the insides of the cylinder. The machine man released these, and with the help of his comrade removed the body of the creature from the cosmic coffin in which they had found it.

"He is dead!" pronounced one of the machine men after a careful examination of the corpse. "He has been like this for a long time."

"There are strange thought impressions left upon his mind," remarked another.

One of the machine men, whose metal body was of a different shade than that of his companions, stepped forward, his cubic body bent over that of the strange creature who was garbed in fantastic accoutrements. He examined the dead organism a moment, and then turned to his companions.

"Would you like to hear his story?" he asked.

"Yes!" came the concerted reply.

"You shall, then," was the ultimatum. "Bring him into my laboratory. I shall remove his brain and stimulate the cells into activity once more. We shall give him life again, transplanting his brain into the head of one of our machines."

With these words he directed two of the Zoromes to carry the corpse into the laboratory.

As the space ship cruised about in the vicinity of this third planet which 25X-987 had decided to visit on finding the metal cylinder with its queer inhabitant, 8B-52, the experimenter, worked unceasingly in his laboratory to revive the long dead brain cells to action once more. Finally, after consummating his desires and having his efforts crowned with success, he placed the brain within the head of a machine. The brain was brought to consciousness. The creature's dead body was discarded after the all-important brain had been removed.

CHAPTER III

Recalled to Life

As Professor Jameson came to himself he was aware of a strange feeling. He was sick. The doctors had not expected him to live; they had frankly told him so—but he had cared little in view of the long, happy years stretched out behind him. Perhaps he was not to die yet. He wondered how long he had slept. How strange he felt—as if he had no body. Why couldn't he open his eyes? He tried very hard. A mist swam before him. His eyes had been open all the time but he had not seen before. That was queer, he ruminated. All was silent about his bedside. Had all the doctors and nurses left him to sleep—or to die?

Devil take that mist which swam before him, obscuring everything in line of vision. He would call his nephew. Vainly he attempted to shout the word "Douglas," but to no avail. Where was his mouth? It seemed as if he had none. Was it all delirium? The strange silence—perhaps he had lost his sense of hearing along with his ability to speak—and he could see nothing distinctly. The mist had transferred itself into a confused jumble of indistinct objects, some of which moved about before him.

He was now conscious of some impulse in his mind which kept questioning him as to how he felt. He was conscious of other strange ideas which seemed to be impressed upon his brain, but this one thought concerning his indisposition clamored insistently over the lesser ideas. It seemed just as if someone was addressing him, and impulsively he attempted to utter a sound and tell them how queer he felt. It seemed as if speech had been taken from him. He could not talk, no matter how hard he tried. It was no use. Strange to say, however, the impulse within his mind appeared to be satisfied with the effort, and now put another question to him. Where was he from? What a strange question when he was at home. He told them as much. Had he always lived there? Why, of course.

The aged professor was now becoming more astute to his conditions. At first it was only a mild, passive wonderment at his helplessness and the strange thoughts which raced through his mind Now he attempted to arouse himself from the lethargy.

Quite suddenly his sight cleared, and what a surprise! He could see all the way around him without moving his head! And he could look at the ceiling of his room! His room? Was it his room! No—it couldn't be. Where was he? What were those queer machines before him? They moved on four legs. Six tentacles curled outward from their cubical bodies. One of the machines stood close before him. A tentacle shot out from the object and rubbed his head. How strange it felt upon his brow. Instinctively he obeyed the impulse to shove the contraption of metal from him with his hands.

His arms did not rise, instead six tentacles projected upward to force back the machine. Professor Jameson gasped mentally in surprise as he gazed at the result of his urge to push the strange, unearthly looking machine-caricature from him. With trepidation he looked down at his own body to see where the tentacles had come from, and his surprise turned to sheer fright and amazement. His body was like the moving machine which stood before him! Where was he? What had ever happened to him so suddenly? Only a few moments ago he had been in his bed with the doctors and his nephew bending over him, expecting him to die. The last words he had remembered hearing was the cryptic announcement of one of the doctors.

"He is going now."

But he hadn't died after all, apparently. A horrible thought suddenly struck him! Was this the life after death? Or was it an illusion of the mind? He became aware that the machine in front of him was attempting to communicate something to him. How could it, thought the professor, when he had no mouth. The machine walked nearer on its four legs. Was it alive? Its desire to communicate an idea to him became more insistent. The suggestion of the machine's question was in his mind. Telepathy, thought he.

The creature was asking him about the place whence he had come. He didn't know; his mind was in such a turmoil of thoughts and conflicting ideas. He allowed himself to be led to a window where the machine with waving tentacle pointed towards an object outside. It was a queer sensation to be walking on the four metal legs. He looked from the window and saw that which caused him to nearly drop over, so astounded was he.

The professor found himself gazing from the boundless depths of space across the cosmic void to where a huge planet lay quiet. Now he was sure it was an illusion which made his mind and sight behave so queerly. He was troubled by a strange dream. Carefully he examined the topography of the gigantic globe which rested off in the distance. At the same time he could see back of him the concourse of mechanical creatures crowding up behind him and was aware of a telepathic conversation which was being carried on behind him—or before him. Which was it? Eyes extended all the way around his head, while there existed no difference on any of the four sides of his cubed body. His mechanical legs were capable of moving in any of four given directions with perfect ease, he discovered.

The planet was not the earth—of that he was sure. None of the familiar continents lay before his eyes. And then he saw the great red ball of the dying sun. That was not the sun of his earth. It had been a great deal more brilliant.

"Did you come from that planet?" came the thought impulse from the mechanism by his side.

"No," he returned.

He then allowed the machine men—for he assumed that they were machine men—and reasoned that somehow or other they had by some marvelous transformation made him over just as they were, to lead him through the craft of which he now took notice for the first time. It was an interplanetary flyer, or space ship, he believed.

25X-987 now took him to the compartment where they had removed him from the strange container they had found wandering in the vicinity of the nearby world. There they showed him the long cylinder.

"My rocket satellite!" exclaimed Professor Jameson to himself, though in reality every one of the machine men received his thoughts plainly. "What is it doing here?"

"We found your dead body within it," stated 25X-987. "Your brain was removed to the machine after having been stimulated into activity once more. Your carcass was thrown away."

Professor Jameson stood dumbfounded by the words of the machine man.

"So I did die!" exclaimed the professor. "And my body was placed within the rocket to remain in everlasting preservation until the end of all earthly time! Success! I have attained unrivalled success!"

He then turned to the machine man.

"How long have I been that way?" he asked excitedly.

"How should we know?" replied the Zorome. "We picked up your rocket only a short time ago, which, according to your computation, would be less than a day. This is our first visit to your planetary system and we chanced upon your rocket. So it is a satellite? We didn't watch it long enough to discover whether or not it was a satellite. At first we thought it to be another traveling space craft, but when it refused to answer our signals we investigated."

"And that was the earth at which I looked," mused the professor. "No wonder I didn't recognize it. The topography has changed so much. How different the sun appears—it must have been over a million years ago when I died!"

"Many millions," corrected 25X-987. "Suns of such size as this one do not cool in so short a time as you suggest."

Professor Jameson, in spite of all his amazing computations before his death, was staggered by the reality.

"Who are you?" he suddenly asked.

"We are the Zoromes from Zor, a planet of a sun far across the Universe."

25X-987 then went on to tell Professor Jameson something about how the Zoromes had attained their high stage of development and had instantly put a stop to all birth, evolution and death of their people by becoming machine men.

CHAPTER IV

The Dying World

"AND now tell us of yourself," said 25X-987, "and about your world."

Professor Jameson, noted in college as a lecturer of no mean ability and perfectly capable of relating intelligently to them the story of the earth's history, evolution and march of events following the birth of civilization up until the time when he died, began his story. The mental speech hampered him for a time, but he soon became accustomed to it so as to use it easily, and he found it preferable to vocal speech after a while. The Zoromes listened interestedly to the account until Professor Jameson had finished.

"My nephew," concluded the professor, "evidently obeyed my instructions and placed my body in the rocket I had built, shooting it out into space where I became the satellite of the earth for these many millions of years."

"Do you really want to know how long you were dead before we found you?" asked 25X-987. "It would be interesting to find out."

"Yes, I should like very much to know," replied the professor.

"Our greatest mathematician, 459-C-79, will tell you." The mathematician stepped forward. Upon one side of his cube were many buttons arranged in long columns and squares.

"What is your unit of measuring?" he asked.

"A mile."

"How many times more is a mile than the length of your rocket satellite?"

"My rocket is fifteen feet long. A mile is five thousand two hundred and eighty feet."

The mathematician depressed a few buttons .

"How far, or how many miles from the sun was your planet at that time?"

"Ninety-three million miles," was the reply.

"And your world's satellite which you call moon from your planet, earth?"

"Two hundred and forty thousand miles."

"And your rocket?"

"I figured it to go about sixty-five thousand miles from the earth."

"It was only twenty thousand miles from the earth when we picked you up," said the mathematician, depressing a few more buttons. "The moon and sun are also much nearer your planet now."

Professor Jameson gave way to a mental ejaculation of amazement.

"Do you know how long you have cruised around the planet in your satellite?" said the mathematician. "Since you began that journey, the planet which you call the earth has revolved around the sun over forty million times!"

"Forty—million—years!" exclaimed Professor Jameson haltingly. "Humanity must have perished from the earth long ago! I'm the last man on earth!"

"It is a dead world," interjected 25X-987.

"Of course," elucidated the mathematician, "those last few million years are much shorter than the ones in which you lived. The earth's orbit is of less diameter and its speed of revolution is greatly increased, due to its proximity to the cooling sun. I should say that your year was some four times as long as the time in which it now takes the planet to circumnavigate the sun."

"How many days were there in your year?"

"Three hundred and sixty-five."

"The planet has now ceased rotating entirely."

"It seems queer that your rocket satellite should avoid the meteors so long," observed 459C-79, the mathematician.

"Automatic radium repulsion rays," explained the professor.

"The very same rays which kept us from approaching your rocket," stated 25X-987, "until we neutralized them."

"You died and were shot out into space long before life occurred on Zor," soliloquized one of the machine men. "Our people had not yet been born when yours had probably disappeared entirely from the face of the earth."

"Hearken to 72N-4783," said 25X-987, "he is our philosopher, and loves to dwell on the past life of Zor when we were flesh and blood creatures with the threat of death hanging always over our heads. At that time, like the life you knew, we were born, we lived and died, all within a very short time, comparatively."

"Of course, time has come to mean nothing to us, especially when we are out in space," observed 72N-4783. "We never keep track of it on our expeditions even though back in Zor such accounts are accurately kept. By the way, do you know how long we stood here while you recounted to us the history of your planet? Our machine bodies never get tired, you know."

"Well," ruminated Professor Jameson, giving a generous allowance of time. "I should say about a half a day, though it seemed scarcely as long as that."

"We listened to you for four days," replied 72N-4783.

Professor Jameson was aghast.

"Really, I hadn't meant to be such a bore," he apologized.

"That is nothing," replied the other. "Your story was interesting, and had it been twice as long, it would not have mattered, nor would it have seemed any longer. Time is merely relative, and in space actual time does not exist at all, any more than your forty million years' cessation of life seemed more than a few moments to you. We saw that it was so when your first thought impressions reached us following your revival."

"Let us continue on to your planet earth," said 25X-987. "Perhaps we shall find more startling disclosures there."

As the space ship of the Zoromes approached the sphere from which Professor Jameson had been hurled in his rocket forty million years before, the professor wondered how the earth would appear, and what radical changes he would find. Already he knew that the geographical conditions of the various continents were changed. He had seen as much from the space ship.

A short time later the earth was reached. The space travelers from Zor, as well as Professor Jameson, emerged from the cosmic flyer to walk upon the surface of the planet. The earth had ceased rotating, leaving one-half its surface turned always toward the sun. This side of the earth was heated to a considerable degree, while its antipodes, turned always away from the solar luminary, was a cold, frigid, desolate waste. The space travelers from Zor did not dare to advance very far into either hemisphere, but landed on the narrow, thousand-mile strip of territory separating the earth's frozen half from its sun-baked antipodes.

As Professor Jameson emerged from the space ship with 25X-987, he stared in awe at the great transformation four hundred thousand centuries had wrought. The earth's surface, its sky and the sun were all so changed and unearthly appearing. Off to the east the blood red ball of the slowly cooling sun rested upon the horizon, lighting up the eternal day. The earth's rotation had ceased entirely, and it hung motionless in the sky as it revolved around its solar parent, its orbit slowly but surely cutting in towards the great body of the sun. The two inner planets, Mercury and Venus, were now very close to the blood red orb whose scintillating, dazzling brilliance had been lost in its cooling process. Soon, the two nearer planets would succumb to the great pull of the solar luminary and return to the flaming folds, from which they had been hurled out as gaseous bodies in the dim, age-old past, when their careers had just begun.

The atmosphere was nearly gone, so rarefied had it become, and through it Professor Jameson could view with amazing clarity without discomfort to his eyes the bloated body of the dying sun. It appeared many times the size he had seen it at the time of his death on account of its relative nearness. The earth had advanced a great deal closer to the great star around which it swung.

The sky towards the west was pitch black except for the irridescent twinkle of the fiery stars which studded that section of the heavens. As he watched, a faint glow suffused the western sky, gradually growing brighter, until, like a great gem inlaid in the velvety blackness, the full moon majestically lifted itself above the horizon, casting its pale, ethereal radiance upon the dying world beneath. It was increased to many times the size Professor Jameson had ever seen it during his natural lifetime. The earth's greater attraction was drawing upon the moon just as the sun was pulling the earth ever nearer itself.

This cheerless landscape confronting the professor represented the state of existence to which the earth had come. It was a magnificent spread of loneliness which bore no witness to the fact that it had seen the teeming of life in better ages long ago. The weird, yet beautiful scene, spread in a melancholy panorama before his eyes drove his thoughts into gloomy abstraction with its dismal, depressing influence. Its funereal, oppressive aspect smote him suddenly with the chill of a terrible loneliness.

25X-987 aroused Professor Jameson from his lethargic reverie. "Let us walk around and see what we can find. I can understand how you feel in regard to the past. It is quite a shock—but it must happen to all worlds sooner or later—even to Zor. When that time comes, the Zoromes will find a new planet on which to live. If you travel with us, you will become accustomed to the sight of seeing dead, lifeless worlds as well as new and beautiful ones pulsating with life and energy. Of course, this world being your own, holds a peculiar sentimental value to you, but it is really one planet among billions."

Professor Jameson was silent.

"I wonder whether or not there are any ruins to be found?" queried 25X-987.

"I don't believe so," replied the professor. "I remember hearing an eminent scientist of my day state that given fifty thousand years, every structure and other creation of man would be obliterated entirely from the earth's surface."

"And he was right," endorsed the machine man of Zor. "Time is a great effacer."

For a long time the machine men wandered over the dreary surface of the earth, and then 25X-987 suggested a change of territory to explore. In the space ship, they moved around the earth to the other side, still keeping to the belt of shadowland which completely encircled the globe like some gigantic ring. Where they now landed arose a series of cones with hollow peaks.

"Volcanoes!" exclaimed the professor.

"Extinct ones," added the machine man.

Leaving the space ship, the fifty or more machine men, including Professor Jameson, were soon exploring the curiously shaped peaks. The professor, in his wanderings

had strayed away from the rest, and now advanced down into one of the cup-like depressions of the peak, out of sight of his companions, the Zoromes.

CHAPTER V

Eternity or Death

HE was well in the center of the cavity when the ground beneath him gave way suddenly and he catapulted below into the darkness. Through the Stygian gloom he fell in what seemed to be an endless drop. He finally crashed upon something hard. The thin crust of the volcano's mouth had broken through, precipitating him into the deep, hollow interior.

It must have been a long ways to fall—or so it had seemed. Why was he not knocked senseless or killed? Then he felt himself over carefully with three tentacles. His metal legs were four broken, twisted masses of metal, while the lower half of his cubic body was jammed out of shape and split. He could not move, and half of his six tentacles were paralyzed.

How would he ever get out of there? he wondered. The machine men of Zor might never find him. What would happen to him, then? He would remain in this deathless, monotonous state forever in the black hole of the volcano's interior unable to move. What a horrible thought! He could not starve to death; eating was unknown among the Zoromes, the machines requiring no food. He could not even commit suicide. The only way for him to die would be to smash the strong metal head, and in his present immovable condition, this was impossible.

It suddenly occurred to him to radiate thoughts for help. Would the Zoromes receive his messages? He wondered how far the telepathic messages would carry. He concentrated the powers of his mind upon the call for help, and repeatedly stated his position and plight. He then left his mind clear to receive the thought answers of the Zoromes. He received none. Again he tried. Still he received no welcoming answer. Professor Jameson became dejected.

It was hopeless. The telepathic messages had not reached the machine men of Zor. They were too far away, just as one person may be out of earshot of another's voice. He was doomed to a terrible fate of existence! It were better that his rocket had never been found. He wished that the Zoromes had destroyed him instead of bringing him back to life—back to this!

His thoughts were suddenly broken in upon.

"We're coming!"

"Don't give up hope!"

If the professor's machine body had been equipped with a heart, it would have sung for joy at these welcome thought impressions. A short time later there appeared in the ragged break of the volcano's mouth, where he had fallen through, the metal head of one of the machine men.

"We shall have you out of there soon," he said.

The professor never knew how they managed it, for he lost consciousness under some strange ray of light they projected down upon him in his prison. When he came to consciousness once more, it was to find himself inside the space ship.

"If you had fallen and smashed your head, it would have been all over with you," were the first thought impulses which greeted him. "As it is, however, we can fix you up first rate."

"Why didn't you answer the first time I called to you?" asked the professor. "Didn't you hear me?"

"We heard you, and we answered, but you didn't hear us. You see, your brain is different than ours, and though you can send thought waves as far as we can you cannot receive them from such a great distance."

"I'm wrecked," said the professor, gazing at his twisted limbs, paralyzed tentacles and jammed body.

"We shall repair you," came the reply. "It is your good fortune that your head was not crushed."

"What are you going to do with me?" queried the professor. "Will you remove my brains to another machine?"

"No, that isn't necessary. We shall merely remove your head and place it upon another machine body."

The Zoromes immediately set to work upon the task, and soon had Professor Jameson's metal head removed from the machine which he had wrecked in his fall down the crater. All during the painless operation, the professor kept up a series of thought exchanges in conversation with the Zoromes, and it seemed but a short time before his head surmounted a new machine and he was ready for further exploration. In the course of his operation, the space ship had been moved to a new position, and now as they emerged 25X-987 kept company with Professor Jameson.

"I must keep an eye on you," he said. "You will be getting into more trouble before you get accustomed to the metal bodies."

But Professor Jameson was doing a great deal of thinking. Doubtlessly, these strange machine men who had picked up his rocket in the depths of space and had brought him back to life, were expecting him to travel with them and become adopted into the ranks of the Zoromes. Did he want to go with them? He couldn't decide. He had forgotten that the machine men could read his innermost thoughts.

"You wish to remain here alone upon the earth?" asked 25X-987. "It is your privilege if you really want it so."

"I don't know," replied Professor Jameson truthfully.

He gazed at the dust around his feet. It had probably been the composition of men, and had changed from time to time into various other atomic structures of other queer forms of life which had succeeded mankind. It was the law of the atom which never died. And now he had within his power perpetual existence. He could be immortal if he wished! It would be an immortality of never-ending adventures in the vast, endless Universe among the galaxy of stars and planets.

A great loneliness seized him. Would he be happy among these machine men of another far-off world—among the Zoromes? They were kindly and solicitous of his welfare. What better fate could he expect? Still, a longing for his own kind arose in him—the call of humanity. It was irresistible. What could he do? Was it not in vain? Humanity had long since disappeared from the earth—millions of years ago. He wondered what lay beyond the pales of death—real death, where the body decomposed and wasted away to return to the dust of the earth and assume new atomic structures.

He had begun to wonder whether or not he had been dead all these forty millions of years—suppose he had

been merely in a state of suspended animation. He had remembered a scientist of his day, who had claimed that the body does not die at the point of official death. According to the claims of this man, the cells of the body did not die at the moment at which respiration, heart beats and blood circulation ceased, but existed in the semblance of life for several days afterward, especially in the cells of the bones, which died last of all.

Perhaps when he had been sent out into space in his rocket right after his death, the action of the cosmic void was to halt this slow death of the cells in his body, and hold him in suspended animation during the ensuing millions of years. Suppose he should really die—destroying his own brain? What lay beyond real death? Would it be a better plane of existence than the Zoromes could offer him? Would he rediscover humanity, or had they long since arisen to higher planes of existence or reincarnations? Did time exist beyond the mysterious portals of death? If not, then it was possible for him to join the souls of the human race. Had he really been dead all this time? If so, he knew what to expect in case he really destroyed his own brain. Oblivion!

Again the intense feeling of loneliness surged over him and held him within its melancholy grasp. Desperately, he decided to find the nearest cliff and jump from it—head first! Humanity called; no man lived to companion him. His four metal limbs carried him swiftly to the summit of a nearby precipice. Why not gamble on the hereafter? 25X-987, understanding his trend of thought, did not attempt to restrain him. Instead, the machine man of Zor waited patiently.

As Professor Jameson stood there meditating upon the jump which would hurl him into a new plane of existence—or into oblivion, the thought transference of 25X-987 reached him. It was laden with the wisdom born of many planets and thousands of centuries' experience.

"Why jump?" asked the machine man. "The dying world holds your imagination within a morbid clutch. It is all a matter of mental condition. Free your mind of this fascinating influence and come with us to visit other worlds, many of them beautiful and new. You will then feel a great difference.

"Will you come?"

The professor considered for a moment as he resisted the impulse to dive off the declivity to the enticing rocks far below. An inspiration seized him. Backing away from the edge of the cliff, he joined 25X-987 once more.

"I shall come," he stated.

He would become an immortal after all and join the Zoromes in their never-ending adventures from world to world. They hastened to the space ship to escape the depressing, dreary influence of the dying world, which had nearly driven Professor Jameson to take the fatal leap to oblivion.

THE END

Cleon of Yzdral

By P. Schuyler Miller

(*Continued from page* 333)

so was he my guest here, and his kinsmen with him. Together we roved the face of this Second Planet—the land beyond the black desert, the mountainous land to the south, and those smaller isles to the north, where Thule will once more become an empire. For we of Thula gave him aeros, and the men of that deep buried world will come again to the surface of their planet, leaving the Underworld to those Singing Ones who are already changing the swamplands and jagged ridges to a thing of beauty, where the soft blue light glows instead of the wan white of the luminous clouds.

One last thing there is, of mighty importance to us of Atlantis. Yzdral I found looted, stripped of its great library and tools of science. But in their place was a scroll in the old tongue of the first Atlantides—a tale stranger than any dream! For it told of men of the First Planet, of a mighty race advanced in wisdom and science beyond ourselves in many ways, a race which has found the secret of the thunder of Zeus, even as did that long dead Prince of Quetzal, men who came here to the Second Planet, Poseidon, by its awful power! I know now the truth of that aero above the fused fortress, and of the storm that drowned the living jungles of the Underworld and stripped much of the inner caverns of the grey death-dust. In the pit below Luda we found two of the thunderbolt devices, which they name by the strange word of "resonator," placed there to block the path of the Black Ones. With these as models and with the writings of the Old One who came from the First Planet, for guide, we have built more. Some of our men of science, and many of the younger men who seek adventure wish to go there, but I am emperor now, and by my word only a chosen few may go, to pave the way in a strange, alien world or to bar it to others. For their life and their ideals will not be like ours, and unless there is some spot where we may start anew, undisturbed, it is best to remain here in our own world. The gate between our worlds must not be closed to those men of wisdom who seek the Purpose, but for many only harm would result. It is always so.

We have found the pit in the red clay where they appeared, marking a spot in their world where we will be received with sympathy and counseled well, and it is my hope that we and they will share our burdens and triumphs under the unity of the Race, but they are young yet, perhaps it may not be. Time must tell.

THE END.

The Metal

By Otis Adelbert Kline

WHEN the most powerful artillery, deadly bacteria and explosives known, and the most destructive methods available fail to be effective against some enemy's unknown weapon of war, it is time, very frequently, to turn to some simple means of combat and attack. Paradoxically, though, it is the simple thing that is so difficult to hit upon. In fact, like some of the greatest discoveries and inventions, the most destructive chemical solutions are often discovered by sheer accident. For instance, who could ever have thought purposefully of the chemical that was finally adopted by the hero of this story?

Foreword

MUCH has been written about the terrific cataclysm of 1960—the eruption of the volcano, Coseguina, with its accompaniment of earthquakes, fires, floods and storms, which carried death and destruction into Salvador, Honduras and Nicaragua.

The world has been told by a thousand writers, with a thousand different viewpoints, of the awful blackness, so much more intense and so far greater in extent than *"La Oscuridad Grande"*—"The Great Darkness" of 1835—as to relegate the former event, awe-inspiring as it was, to insignificance.

Eyewitnesses who were fortunate enough to escape with their lives from the devastated cities, have described their varying sensations when, with noon and midnight alike, tiles slid from the roofs, walls crumbled, buildings crashed to the shaking earth like houses of cards, bells tolled futilely in cracked towers, and the air was filled with shrieks, prayers and choking dust.

But, immense and devastating as it was, it is not of this cataclysm that I would write, but of that infinitely more terrible menace to all mankind which closely followed it—which was, in fact, loosed on the inhabitants of the earth's crust as a direct result of the eruption. For I was an eyewitness of the first appearance of the Metal Menace, as well as a direct participant in the action that followed, as men struggled to shake off the fetters with which the slimy intelligences of the nether world were slowly and surely shackling and enslaving them.

It is difficult to attempt to write in an orderly fashion of those nerve-racking, reason-destroying events when they are yet so close to me, but life is fleeting, death may come to me at any moment, and there are many facts which are known to me alone, and which should be preserved for posterity. For this reason, I begin my task as chronicler now, instead of waiting for time to bring order and clarity to the vision. WALTER STUART.

CHAPTER I

The Metal Beings

"HOVER," I shouted through the control room phone, and my pilot, Art Reeves, skillfully banked, returning the *Blettendorf* electroplane almost to the exact spot and holding it there suspended with helicopters whirring.

We were directly above the crater of Coseguina. But six months had passed since its eruption, the most spectacular and destructive in the history of the world, yet it had not only ceased to smoke, but the hot lava, which had bubbled and seethed for some months in this immense cauldron of Mother Nature, had suddenly receded, and there remained a yawning black shaft, the bottom of which was sunk so far into the bowels of the earth as to be invisible.

It was to investigate this singular and previously unheard of phenomenon that my chief, the secretary of the American Geographic Association, had sent me from Chicago in the *Blettendorf*, together with Pat Higgins, my photographer and assistant, and Pilot Reeves.

"Descend," I said, and we began swiftly and smoothly to drop toward the yawning blackness beneath us.

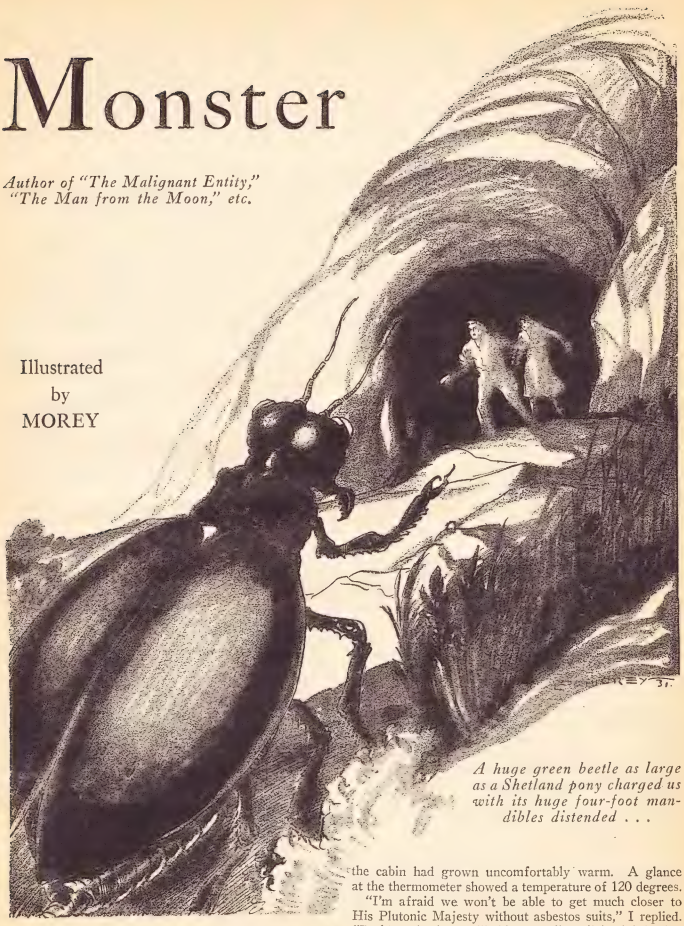
Pat flashed on his keel and side lights and started his automatic cameras clicking. Four of them, like the lights, were trained on the crater walls, and the fifth was pointed straight down through the floor.

The top of the crater was fully a mile in diameter, but as we descended, the walls gradually drew closer together. Presently, when our magnetic altimeter showed that we were nearly five thousand feet below sea level, the shaft assumed a uniform diameter of about two hundred feet.

Monster

Author of "The Malignant Entity," "The Man from the Moon," etc.

Illustrated by MOREY



A huge green beetle as large as a Shetland pony charged us with its huge four-foot mandibles distended . . .

"Faith," said Pat with a grin, "this must be where the bottom dropped out of the kettle. If this keeps up, we'll be having tea with the devil in a couple of hours."

I mopped the perspiration from my brow. The air in the cabin had grown uncomfortably warm. A glance at the thermometer showed a temperature of 120 degrees.

"I'm afraid we won't be able to get much closer to His Plutonic Majesty without asbestos suits," I replied. "Besides, the heat will thin our oil until its lubricating value will be nil. If we burn out a couple of helicopter bearings, we're due for a long, hard drop.

"Sure, we'd be old and gray by the time we hit the bottom," said Pat.

Watching the thermometer and magnetic altimeter, I saw that the heat was increasing at the rate of about one degree to every hundred feet of descent. When it reached 135 degrees I ordered Reeves to hover.

"We've come as far as we dare in this machine," I told Pat. "I'll take a look through the binoculars before we ascend."

I pointed my 50X Zeiss glasses downward in an effort to see the bottom of the shaft. But adjust them as I would, I could see only a tiny black speck where the seemingly converging walls—due to perspective—of the pit ended. I did notice something else, however, which caused me to utter an involuntary exclamation of surprise. The walls of the pit beneath us were of gleaming, silvery looking metal, and winding up around them was a railed metal stairway. On this stairway there was a movement—a constant flow of shiny metal globes rolling upward.

Rapidly shifting the focus for a nearer view I looked for the top of the metal wall. I found it in a moment, and the powerful glasses brought every detail so close that it seemed as if I could almost reach out and touch the gleaming railing of the spiral stairway. Never, so long as I live, will I forget the strange, almost unbelievable sight that greeted my eyes.

Standing along the railing near the end of the stairway, were four grotesque creatures, somewhat man-like in form. Their bodies were glistening metal globes, like osage oranges, from which, in lieu of arms and legs, there projected four tentacles, apparently constructed of many little globes strung together like beads. Perched on similar but shorter tentacles above the body spheres were smaller globes, evidently the heads of the creatures. They had enormous goggling eyes, literally like headlights, both in shape, and from the fact that they cast their own rays before them.

The first three of these strange beings carried long pipes slightly curved at the upper ends. The lower ends were attached to flexible tubes greatly resembling conduit, which trailed down the stairway. The fourth held a straight cylinder about three inches in diameter and four feet in length.

The first three individuals were exceedingly busy. In fact they seemed to be the sole structural workers on the stupendous metal shaft that was swiftly rising from the bowels of the earth. The metal globes which were rolling up the stairway were of three sizes, and appeared to be living creatures, for when they reached the ends of their respective lines, all sprouted the queer tentacle-like arms and legs of the four larger creatures, and projected globular heads from their round interiors. Then those of the largest size sprang up, one by one, to the top of the unfinished wall, where they retracted their heads and limbs and rolled closely together.

AS soon as each new globe was in position, the foremost of the three large workers cemented it in place with a stream of gleaming liquid resembling quicksilver, that poured from the tube he carried, and filled in the interstices until a glistening, pebble-grained wall resulted.

The rolling globes of the middle size leaped from the end of their line to make the stairway in the same manner, cemented in place by the second tube-bearer, while those of the smallest size formed the railing and its supporting bars, and were fused into place by the third large worker.

I was dumbfounded. The idea of a race of metal beings building a structure with their own bodies, cheerfully and willingly, was almost unthinkable for me. It was something quite beyond my point of view. But then, a coral polyp's viewpoint as it fuses its body in with millions of others to form an atoll of a reef is also far from the understanding of individualistic men.

"Haven't seen a banshee, have you, chief?" asked Pat, who had noticed my startled expression.

"Take a look for yourself," I responded. "I want to know if you can see what I see."

Focusing his own binoculars he looked, then exclaimed: "Holy smokes! And I thought all the fairies were in Ireland! It's the Little People, sure as my name's Pat Higgins!"

I was looking at the fourth of the larger individuals, the one that carried the tube, wondering what his function was. Suddenly, as if attracted by the intensity of my gaze, he flashed his great goggle eyes upward. For an instant he gazed at the electroplane. Then he pointed his cylinder upward, and there was a crash of broken glass as a projectile struck the floor window.

As we were without weapons, I shouted an order to Reeves:

"Ascend! Full speed!"

"Sure, that one must have been a guard," said Pat, shutting off his clicking cameras. "Wonder what that was he fired at us."

The floor lurched as our craft shot swiftly upward. Something rolled against my foot. It was a shiny metal globe about two inches in diameter—evidently the missile which had been fired from the cylinder.

"Here it is, Pat," I said, and picked it up.

But scarcely had I done so, when it shot out segmented, tentacle-like arms and legs, and a head that was a tiny, goggle-eyed miniature of the creature which had fired it. One of the metal tentacles whipped down on the back of my hand with a stinging blow, so startling me that I dropped the thing. It instantly scurried for the broken floor window, but Pat with a "No you don't!" scooped it up in his empty binocular case and fastened down the lid.

"My grandfather once caught a fairy," said Pat, "and devil a bit of good luck did he have after that. It brought him to an early grave in his ninety-seventh year."

We emerged into the light of day, and Pat shut off his lights.

"Back to Leon," I ordered, and Reeves started the three propellers roaring as he pointed the nose of our craft up over the crater rim.

For our powerful electroplane, capable of a speed of five hundred miles an hour, the sixty-mile trip back to Leon would only have been a matter of a few minutes. But we were not destined to complete it, for scarcely had we passed over the ruins of Viejo, a little more than half the distance, ere Pat, who had been looking backward toward Coseguina, called my attention to the fact that an immense metal globe had shot up out of the crater and was following us through the air at a pace so much swifter than our own that we seemed, by comparison, to be standing still.

I focused my glasses on the big globe as it hurtled swiftly toward us. It was about a hundred and fifty feet in diameter, and constructed of the same gleaming metal that we had noted in the shaft. A minute, and it loomed, immense and menacing, almost upon us.

"Drop," I ordered Reeves.

He shut off the forward propellers, set the wings at perpendicular, and reversed the helicopters. We dropped, just in time, the immense globe hurtling over us with terrific speed. Its momentum must have carried it at least five miles ahead of us before it could turn to come back. In the meantime, we had descended to within a thousand feet of the earth.

"Hover," I shouted to Reeves, but scarcely had he checked our downward progress, less than five hundred feet from the ground, when the globe returned, plunging straight at us.

Reeves managed to swerve slightly to one side before it struck, but our left wing was torn off, and we spun crazily beneath the supporting helicopters. Then a blade broke, and we went into a swift nose dive.

I caught a fleeting glimpse of the ash-covered ruins of a great hacienda rushing up to meet us. Then there was a terrific crash—and darkness.

CHAPTER II

Captured

AN immense cloud of volcanic dust arose as we crashed through the tileless frame of the hacienda roof. Our second helicopter had retarded our fall sufficiently to prevent fatalities, but we were badly shaken up.

The dust was so thick that I could scarcely see my hand before my eyes. The helicopter had ceased to whirl as we struck. The motor was dead.

"All right, Pat?" I asked.

"Safe and sound, chief," he replied.

"And you, Reeves?"

"Not hurt a bit."

"Good. We'd better get out of here at once and try to find a place to hide. That globe will be right back after us, I'm afraid."

Scarcely had I spoken, ere something ground against the roof, and there was a metallic clank as if a chain had been tossed to the floor.

"Follow me," I called, softly, and leaping out of the side door, groped my way through the dust cloud which was beginning to settle a little. The floor was covered to depth of more than a foot with fluffy volcanic ash, making the going difficult.

Presently my outstretched hands encountered a wall, and I followed this to a doorway. Stumbling through, I entered a large room that was in semi-darkness. I felt a hand on my arm. Then Pat whispered:

"They're after us! Hear 'em clanking around in the next room?"

"Where's Reeves?" I asked.

"Don't know. Must have found a place to hide."

We came to another doorway. The door was half ajar, and we squeezed through. We found ourselves in a small clothes closet.

I peered through the interstice between door and frame. The dust was settling rapidly, and the room into which we had crashed was partly visible through the first doorway we had entered. A number of metal creatures like those we had seen in the shaft were swarming over the wreck. Their globular bodies gleamed in the sunlight which filtered through the dust into the hole we had smashed in the roof. And hanging down through that hole was a thick metal cable or tentacle composed of globular segments which tapered slightly toward the tip.

The creatures investigating the wreck of the electroplane were about four feet in height—the same stature as the structural workers we had observed in the shaft.

Suddenly I heard the voice of Reeves:

"Let go of me, damn you!"

In a cloud of swirling dust he was dragged by two of the creatures, each of which had hold of an arm, out into the sunlight. His head and clothing were thickly covered with volcanic ash. Evidently he had missed the doorway, had dug in, and had just been discovered.

Twisting, kicking and cursing, he was dragged up toward the huge tentacle. It whipped around his waist, then jerked him aloft, out of our sight. In a moment it dropped once more. With remarkable agility, the metal beings swarmed up. Then it was withdrawn, there was a clank like that of huge metal door being closed, and the roof creaked as if a great weight had been lifted from it.

"They've gone," said Pat, "and they've got Reeves!"

"Poor devil! And we couldn't do a thing! Come on."

I led the way to the room into which the ship had crashed. Quickly mounting to its top, I climbed up on the unbroken helicopter blade and leaped to the roof. The huge metal sphere had disappeared.

Pat came up beside me.

"It's a long walk to Leon," he said, "and my wrist radiophone is smashed. How's yours?"

I tested it. It was tuned for just such an emergency, with that of my secretary, Miss Davis, who was back in the Hotel Soledade at Leon.

It worked. Her answer came back, clear and distinct.

"Yes, Mr. Stuart."

"Higgins and I cracked up on the roof of a large hacienda, about ten miles northwest of Leon. Send a helicopter taxi for us at once.

"Yes, Mr. Stuart. Right away."

I broke the connection, then turned to Pat.

"Think we can save any of those pictures?" I asked.

"Why not, chief? The fuselage wasn't wrecked. I'll go down and get them."

The helicopter taxi arrived just as Pat came up with the cameras. We got aboard.

"Soledade Hotel," I told the driver.

In five minutes he lowered us to the flat hotel roof. I paid him while Pat unloaded the cameras. We passed them to a couple of liveried attendants, who led the way to our suite.

Miss Davis arose from her typewriter desk, concern in her eyes, as we entered.

"Was anyone injured? Why, where's Mr. Reeves? He's not——"

"Not dead, so far as we know," I replied. "Captured. I'll explain later. Get me the secretary of the Association at once, on the radiovisiphone. Then the President of Nicaragua."

"But President Monteiro and his daughter are here in the hotel," said Miss Davis. "They came from Managua, today. Relief work, you know."

"All right. Get Secretary Black. Then I'll look up President Monteiro."

The face of my chief presently appeared in the radiovisiphone disc.

"Stuart!" he exclaimed. "What are you up to now?"

"Turn on your recorder," I replied. "Then I'll tell you."

"It's on. Go ahead."

I DID. I related every detail of the strange sights we had just witnessed, and the incredible experience through which we had just passed.

When I finished, he said:

"If anyone but you had told me this, Stuart, I'd think it some sort of a practical joke. But you are such a serious person, I believe you. Yet it's possible that you were suffering from an hallucination."

"I'll send you photographs within ten hours," I said. "Cameras don't have hallucinations."

"Right. I'll notify the War Department. Remain within call. Off.

As he spoke the word "Off," the connection was automatically broken. His face faded from the disc.

Miss Davis had gotten the President of Nicaragua on the room visiphone.

"President Monteiro will see you in ten minutes," she said. "He is in Parlor L."

I went into the next room, where Pat was busy developing his films. He had taken his small metal captive from his binocular case and confined it in a stout bird cage with a small padlock on the door. It was leaning against the bars, watching him with its round, headlight eyes, as I entered.

"Get your stuff in shape so you can leave it, Pat," I said. "We're going to call on President Monteiro in ten minutes, and take the prisoner with us."

Ten minutes later I knocked on the door of President Monteiro's suite. Pat stood behind me with his caged prisoner. We were ushered in by an attendant. The president, a small dark man with a carefully trimmed iron gray beard, was seated behind a large mahogany table. Beside him, with her hand on his shoulder, stood a slender, brown-eyed girl, apparently about twenty years of age. I recognized her instantly from the photographs I had seen of her, as Dolores Monteiro, daughter of the president, and the most famous beauty in the two Americas.

The president greeted me cordially. I introduced my assistant, and he presented us to his daughter. An attendant placed chairs.

Selecting a long, thin cigar from a humidor, and pushing it toward me with a gesture of invitation, the president said:

"And now, Señor Stuart, what is this important message you have for me?"

Briefly I told him of our strange experience—the astounding sights we had witnessed, and our narrow escape. He smoked with countenance unruffled until the end. Then he said:

"Understand me, señor, I am not doubting your word. But a story so strange as yours needs substantiation. You will not mind if I—ah—investigate further?"

"That is precisely what I hope you will do," I replied. "We have brought an exhibit, however, which I believe will convince you—a miniature specimen of the strange race of metal creatures we saw."

I lifted the cage, and put it on the table. The little creature inside it focused its huge headlight eyes inquiringly on each of us in turn, as if wondering what to expect next.

"Looks like a man-made automaton," commented the president.

"True," I replied, "yet it, and its larger fellows which we encountered, acted as if endowed with intelligence."

"You think these creatures will be—hostile?"

"Judging by their past actions, yes."

"Hum. We'll try them a little further."

He pressed a button on the table. A buzzer sounded in the next room and a uniformed aide came in.

"Dispatch three combat ships, fully armed and manned, to the crater Coseguina at once," he ordered. "Tell them to be on the lookout for flying globes and strange metal beings, but to make no hostile move unless attacked. Have one descend as far as possible into the crater while the other two stand by to guard it. If attacked, they are to defend themselves to the best of their ability. And let me hear their reports."

The aide bowed and withdrew.

"Perhaps you would like to see some photographs," I suggested.

"With pleasure," replied the president.

"I'll make some quick prints and bring them up," said Pat, rising. "Shall I leave the prisoner here?"

"Yes, leave him," said Monteiro. "I want to examine him further."

Pat went out and closed the door. The president poked an inquiring finger through the bars at the little creature in the cage, then withdrew it hastily with an exclamation of surprise as it struck at the encroaching digit with one of its tentacle arms.

"*Por Dios!*" he exclaimed. "This one, at least, is hostile. We shall soon find out about the others."

We did not have long to wait. The radiovisiphone hummed, and the face of the squadron commander's operator appeared in the disc.

"We are hovering over the southern rim of Coseguina. RN-337 hangs over the northern rim. RN-339 is above the shaft. It descends. A huge sphere has come out to meet it. They collide. The 339 falls, a mass of wreckage. Our machine gunners are spraying the globe with bullets, as are those of the 337. It darts for the 337, which tries to elude it, but is brought down with one side torn off. It is coming at us. Our commander has ordered a retreat. It is too swift for us. It is almost upon us. We are d——"

There was a terrific crash, and the disc went blank.

Tensely, we waited in front of the disc—the president, the girl and I. It continued blank. Monteiro rushed into the next room. I could hear him volleying orders.

Suddenly I was aware that my wrist was tingling. Someone was trying to call me. I pressed the connection of my wrist radiophone.

"Mr. Stuart! Mr. Stuart!" It was the voice of Reeves. "Art Reeves! I exclaimed. "where are you?"

"Too much time. Called to warn you. That little metal man guiding them to you. Keep him in darkness. Leave at once. They're coming for me. Must——"

"Quick!" I said. "We must get out of here!"

Stripping the scarf from the table, I was about to muffle the cage when something struck the window-screen—ripped it away. A huge tentacle whipped into the room. Clinging to it were four of the globular metal creatures. One picked up the cage, a second seized the girl, and the other two pounced upon me, gripping my arms with their powerful tentacles. As helpless as if I had been held in a steel vise, I saw girl and cage jerked

out of the window and upward. Then the big tentacle returned, wrapped around my waist, and dragged me after them.

CHAPTER III

The City of Metal

I WAS thrown into a small, brilliantly lighted room. A heavy metal door clanged shut behind me. To all appearances the floor, walls and ceiling were constructed of seamless brown metal, without windows or doors. Even the source of the light was invisible. It seemed to radiate from the six metal surfaces that surrounded me.

On the floor lay the girl, a look of terror in her eyes. Bending over, I lifted her to a sitting posture. The floor lurched suddenly, and I sprawled beside her. Recovering my balance, I asked:

"Are you hurt, señorita?"

"No, señor, but I am very frightened. Where are we?"

"If I'm not mistaken," I replied, "we're riding in one of the swift flying globes of the metal people."

In a few minutes there was a second lurch, followed by a sudden jolt that threw us both flat. Then a door opened in the apparently solid wall, and four of the metal creatures came in. Helping us to our feet, they hustled us out upon a platform constructed from brown metal. It was part of an extensive system of docks, along which hundreds of the globes rested. Countless others were arriving and leaving, from and for all points of the compass. Far above these flying globes I could see, through a dim haze, a great self-luminous dome—the ceiling of this tremendous underground world.

But most amazing of all was the immense city of gleaming white metal which surrounded the docks—a city of glistening towers, walls and battlements, all metal.

But conductors led us to a queer brown-metal vehicle—flat, with a hand-rail traversing the center longitudinally. In lieu of wheels, it traveled on four spheres, which supported it on idling bearings. There were no seats. Our captors, after bundling us aboard, indicated that we must stand, gripping the rail in the center.

The vehicle started smoothly, accelerating with great rapidity. I was unable to see any controls, and none of our captors seemed to be driving or steering it. Emerging from the dock, we rolled out on a broad, smooth street, paved with brown metal. Many vehicles like that we occupied were traversing this street, some of them at terrific rates of speed. Some had passengers, some carried materials of various kinds, and some were empty.

Moving in and out among the vehicles, and often traveling at even greater speeds, were thousands of silvery metal globes of divers sizes. I noticed some of them no larger than buckshot, while others were easily ten feet in diameter. I saw them, from time to time, stop at the entrances of buildings, put forth arms, legs and heads, and enter. Others, coming out of the buildings, retracted their limbs and heads and rolled swiftly away. I judged them to be factories, and afterward confirmed this belief.

We passed a building under construction, and I saw that it was being put together in the same manner as the metal shaft I had seen rising in Coseguina—the bodies of thousands of these strange creatures being utilized as building material.

Presently we drew up before a metal wall about fifty feet in height. Two massive gates, which had previously appeared as part of the wall itself, swung back, revealing a winding metal roadway which led to an immense building that stood in the center of the most unusual garden I have ever seen.

Instead of grass, flowers, shrubs and trees, it was filled with mosses, moulds, fungae, lichens and other thallophytic growths. Short velvety gray moss carpeted the lawn. There were clumps of huge mushrooms and morels, of many shapes, sizes and colors. But the most striking of all were the varieties of gigantic slime moulds.

The *leocarpus fragilis* with its gleaming golden spore cases shaped like elongated eggs, a mycetozoan on the borderland between the animal and vegetable kingdoms, grew to a height of ten feet. Globe-shaped physariums attained a diameter of three to four feet. And the dusky plumes of the stemonitis, massed in large clumps, waved twenty feet above our heads. Not so pleasing to look upon were the slimy, gelatinous plasmodia of the various species, flowing sluggishly about in the areas to which they had been confined, questing the food which they must have in order to produce the beautiful plumes, globes, baskets and ovoid spore cases of mature ones.

They were all creatures of the darkness—conceived and developed without sunlight—unable even to exist in the direct rays of the lord of the solar system, but multiplying and growing prodigiously, here in this weird, pale light of the nether world.

We came to a stop before what looked like the unbroken wall of the building, but here again a previously invisible door opened, revealing a circular doorway about fifteen feet in diameter.

Here we left our strange vehicle, and walked between our guards along a narrow corridor until we came to a great central foyer which evidently reached to the top of the building. Looking up, I could see galleries encircling it at each level, clear to the top. On the floor of this room near its center was a ring of black discs, each about ten feet in diameter, encircled by a narrow railing. Our captors led us out on one of these and directed us to grip the railing, whereupon it shot up into the air with considerable speed, then slanted over toward one of the higher balconies.

Peering over the railing, I saw that we were being lifted by a gigantic segmented tentacle emerging from the floor where the disc had been. After we had been deposited on the balcony the disc swiftly returned to its original position.

MANY round doors opened on the balcony, and we were conducted through one of these along a corridor to a second, much larger doorway, on each side of which stood two guards carrying metal tubes. They paid no attention to us as we were ushered into a magnificently furnished room which contrasted oddly with the plain brown metal corridors and foyer. The foyer was thickly and richly carpeted, the walls were decorated with murals near the bottom and bas reliefs above, and the ceiling was of luminous yellow metal, which shed a soft, amber light over the whole scene.

At the far end of the room a figure reclined beneath a green and gold canopy, upon a luxuriously cushioned dais raised about three feet above the level of the floor. As we drew near the throne, the figure sat up. I gazed aghast at the thing that confronted us.

At first I thought it a living human skeleton, but as we drew closer, I saw that its flesh and skin were transparent, its bones and teeth translucent, and its viscera and nervous system opaque. Its immense head, fully twice as large in proportion to its size as that of any earthly man, was encircled by a jewel-encrusted gold band, which supported an immense emerald at the center of the forehead. It wore no clothing, but its waist was encircled by a belt of golden links from which a dagger with a jeweled hilt, and several other instruments or weapons, I knew not which, depended. Its feet were enclosed in pointed golden slippers.

The horrible creature arose as our conductors brought us to a halt, and stepped forward to examine us. It poked me in the midriff with an inquisitive, gelatinous finger, pulled down my chin to look into my mouth, and felt my arms and legs. Wherever it touched me, it left prints of slime very much like those left by a garden slug. Its fingers felt cold and clammy.

Having completed its examination of me, the thing returned to its dais and reclined. Then, to my surprise, it addressed, or seemed to address me in English.

"I am disappointed in you, Walter Stuart. Although my other prisoner, Arthur Reeves, looked up to you as a leader, you are one of the creatures of the lower order. And your cranial capacity precludes the possibility of a brain large enough to receive and retain the higher training. Are there no creatures of the higher order upon the outer crust of the earth?"

"I take it," I replied, "that you consider yourself a creature of the higher order."

"I *rule* the creatures of the higher order," was the reply.

"These men of metal?"

"No, small-brained one. They are machines of my invention. I rule the people of my race—the higher order of creatures—the Snals. With the aid of my metal creatures, my Teks, I conquered the inner world—brought every Snal nation under my rule. They are irresistible, my Teks, when I direct them. I am Zet, conqueror and emperor of the inner world."

"I am puzzled to know," I said, "how you learned English."

"Your brain is even more deficient than I suspected," said Zet. "Our conversation is one of thoughts, not words."

"But I am speaking, and you seem to speak," I insisted. "I can hear you."

"You can speak and hear in a dream," said Zet, "yet you actually do neither. Call this a dream if you like. Or bring up, if you wish, those other words in your mind—telepathy or clairaudience. Our subjective minds are conversing without the employment of physical means. The conversation is instantly transferred to the objective consciousness.

"But who are you to question Zet, ruler of the inner world? Answer *my* question."

"There are no Snals on the outer crust of the earth," I said. "It is dominated by creatures called men, of which I am a specimen."

"That is unfortunate," said Zet. "I had hoped to find creatures of a higher order to conquer. But the outer crust will make a mighty empire—and I can set my Snals to rule over these inferior animals called men. It may be, too, that we can improve the race. Perhaps my nobles will take some of your females into their seraglios, thus founding a new race. Our bodies are more fragile than yours. Your brains are inferior to ours. A fusion of the races may prove of great benefit to both. It is worth trying."

"I'm not so sure that our brains are inferior," I retorted. "On the outer crust people born with heads as large as yours are usually imbeciles."

"And in the inner world, people born with heads as small as yours are invariably microcephalous idiots," he said, apparently unruffled. "But it may be that I can use you. I'll have you examined by my scientists. I couldn't use your assistant, Reeves. He disobeyed my first order and communicated with you. To disobey is death."

"You mean you killed him?"

"I did not slay him in anger, as you seem to think. He was turned over to my scientists for a thorough physical examination which they were very anxious to make. He was the first man they had ever seen, and they desired to take him apart."

"And they did this while he lived?"

"Partly. I understand that he died shortly after the examination began."

Vivisection! Poor Art Reeves cut open alive! And at the order of this big-headed, slimy monstrosity before me. Furious anger fired me—quadrupled my strength for the moment. With a sudden jerk, I twisted my arms free of the metal tentacles that held them, and leaped for the dais. My fingers ached to clutch the gelatinous throat of the thing that had ordered his death.

With lightning quickness, the hand of Zet jerked a small tube from his belt—pointed it at my breast. I felt a terrific shock, as if a powerful electric current were passing through my body. My muscles grew rigid—immobile. I seemed rooted to the floor. Then the two Teks leaped forward, seized my arms and dragged me back to my original position.

Zet replaced the tube in his belt.

"So," he said, "you are even more of an animal than I suspected. In one instant, you permitted your emotions to completely overthrow your reason. I doubt if I can use you. But my scientists will find out while I examine this other creature, which appears to be a female."

I saw the girl shudder as Zet arose and walked toward her. Then, struggling futilely, I was dragged away by the two Teks.

CHAPTER IV

The Battle

MY TWO metal captors took me down the corridor and out upon the balcony. Here they placed me on a railed black metal disc similar to that which had lifted us from the first floor, and we were hoisted to the second balcony above. Then they led me down another corridor, and through a circular door into a large room in which more than a hundred Snals were working, some seated at tables, others standing before high benches on which were flasks, tubes, retorts, immense magnifying glasses, and much other paraphernalia I did not recognize.

I was conducted to a square, glassed-in room in the center of this vast laboratory, where a Snal with a head even larger than that of Zet, sat at a metal table. This room, with its glass partitions, was so situated that he

could look into any corner of the laboratory without leaving his seat.

Fastened to a metal band that encircled his head was an immense lens that covered both eyes and most of his nose, so magnifying those hideous features that they were out of proportion with the others, and creating a most grotesque effect.

The two Teks forcibly seated me in a gray metal chair across the table from the Snal, and departed. I was surprised that this slimy, gelatinous individual would allow me in his presence without the Teks to guard me, but learned the reason when, under his steady gaze, I tried to shift to a more comfortable position. I was as firmly attached to the metal chair, which was in turn attached to the floor, as if I had been bound with steel bands. Yet the invisible force that held me did not manifest itself except when I tried to shift my position on the chair.

The Snal stood up, squinting at me through his huge lens. Through his transparent body and his translucent ribs, I could see his heart beating, his lungs inflating and deflating, and his stomach expanding and contracting as it disposed of his last meal. It was evident from his demeanor that he thought me an exceedingly queer looking creature. The feeling was mutual.

"You have been sent to me for examination, Walter Stuart," he said, finally. "I am Hax, chief scientist of the Snal empire."

"I suppose you'll take me apart to find out what makes me go, as you did poor Reeves," I replied.

"You say 'poor Reeves,'" he answered. That is bad. It indicates the exercise of emotion, rather than reason. No, I do not intend taking you apart—not just now, at least. You are to be tested mentally."

He pushed a shiny metal sphere on the table before me. Suddenly it appeared to become transparent.

"A good beginning," said Hax. "You have the vision. It may be that we can use you. Step into this scene."

Suddenly, as I gazed into that metal globe, I felt myself drawn into it—felt that it had enlarged until it was as high as the sky.

I was moving—walking on a metal stairway. Globes were rolling up beside me, becoming Teks, springing up to the top of a wall. In my hands—not hands, tentacles—I held a bent tube from which gleaming liquid metal poured forth each time I pressed a small button on the side. My torso was spherical—a shining globe of metal.

When I had cemented the globe in place I waited for another to climb up beside it. Meanwhile, I glanced over the rim of the wall. It was level with the crater rim of Coseguina. And between me and that rim, thousands of other workers like myself were building a metal city on the sloping sides of the crater. Their animated building material was coming up the shaft in a steady stream, rolling up a spiral ramp that had been constructed at one side. On the crater rim, a great metal dome was rising—swiftly closing inward and upward toward the center with amazing rapidity—shutting out the daylight from above.

Reflecting the sunlight from their shimmering sides, a dozen huge, flying globes slowly circled overhead.

The vision suddenly faded. I was back in the laboratory, glued to the metal chair—a human being once more.

"You have followed well," said Hax. "Now let me see if you can control."

From beneath the table he produced two electrodes on insulated wires. He directed me to grasp one in each hand. Then once more the globe before me became clear—expanded.

I was in a huge warehouse at the peak of a pile of metal globes. I *was* a metal globe! I could look out through my own metal torso as if it had been a pane of glass.

"Descend." A voice came from somewhere beside me, yet I saw no one.

I rolled from my position, and down the side of the pyramid of globes. When I was half way down, the voice said: "Stop."

I halted, clinging to the slanting surface by some magnetic force which I was able to control.

"Let go."

I shut off the force, and rolled to the floor.

"Walk."

I thrust out leg and arm tentacles, put forth my metal head with its great goggling eyes, and scrambled to my feet.

"Back to your place."

Suddenly retracting head and limbs, I rolled back to the top of the pyramid and lay still.

The vision faded. Once more I sat in the laboratory before this strange scientist.

"You can control," he said. "That is good. If you can do this there are others of your race who can also do it. Your mind is unusually strong considering the smallness of your brain. We can use you."

"For what?" I asked.

"For that which you have just done. To control a Tek. Every Tek, large or small, is controlled by a Snal. By using your people to control the Teks, we will release thousands of Snals for other, more intellectual duties, to which their greater minds are suited."

"You mean," I said, "that you intend to make slaves of my people—slaves who will labor with their minds rather than their bodies?"

"Of those who can pass the test, yes. The others will go to feed the plasmodia of the slime moulds which we cultivate for food. Thus we can make use of all. There will be no waste. We are efficient, we Snals."

"Perhaps. But you haven't conquered mankind, and I don't believe you will."

"In order that you may entertain no false hopes," said Hax, "I'll show you what is now transpiring. Watch the globe."

I did. It suddenly became transparent. I was a goggle-eyed Tek, seated high in the air in a metal room situated in a great dome which covered the crater Coseguina. The work of building had been completed with incredible swiftness. I was surrounded by metal, yet I had the power of looking through it at any point by flashing a special ray from between my eyes.

A FLEET of twelve battleships was approaching from the south. They flew the flag of Nicaragua. Another fleet of seven, flying the flag of Honduras, approached from the north, across the Gulf of Fonseca. The two fleets deployed, and formed a semicircle, fronting the isthmus on which the volcano was situated. From the land side an immense army approached behind a long line of great, rumbling tanks. And two fleets of mighty aerial battleships closed in above, attended by several hundred relatively small but exceedingly swift helicopter electroplanes.

Suddenly, as if every gun in the attacking force were under single control, a terrific bombardment began. Shells from the battleships and artillery rained on that metal dome. Immense bombs were dropped by the aerial battleships and electroplanes. Projectiles of smaller caliber, from seventy-fives down to thirty-forties, rattled against that great hemisphere of gleaming metal. But not one shell or projectile so much as dented it.

This bombardment lasted for perhaps five minutes without interruption, and without any visible effect on the great dome. Then, suddenly, a thousand doors that had hitherto appeared to be a part of the solid metal, opened. From each door emerged a flying globe. Like a swarm of angry bees defending a hive, they hurtled at the attackers. Bullets rattled and shells burst against them without effect.

Two globes descended on a Nicaraguan battleship, one above the fore deck, the other near the stern. Long metal tentacles slithered down, gripping the front and rear turrets. And down these tentacles swarmed the Teks. They plunged into the turrets—down the ladders. Each Tek, as it emerged, dragged a human prisoner. One by one these prisoners were passed up into the globes. The Teks followed. The tentacles were drawn up. And the battleship, out of control, traveled aimlessly in a circle as the globes returned with their prisoners.

This scene was, at the same time, being enacted on all the other battleships. Other globes seized the aerial battleships with their powerful tentacles, boarded them, took off the men, and left them to drift unguided, or to crash. One by one the electroplanes were caught and denuded of men. The army attempted to retreat, but this was quickly prevented by a row of globes which formed on the ground, stretching across the peninsula. The Teks swarmed everywhere. Men were pulled out of the tanks—dragged away from the field pieces, or caught as they attempted to flee or hide.

All the battleships were circling erratically. There were several collisions. One ship went down, rammed by another. Aerial battleships and electroplanes were continually crashing to the ground or falling into the Gulf and the ocean. Huge tanks, driverless, climbed the peak as far as the edge of the dome, stood up, grinding at the shimmering metal, and fell over backward, their motors roaring, to tumble down the steep slope they had climbed, and smash to masses of twisted wreckage at the bottom.

In less than thirty minutes after the bombardment began, the last globe returned to the dome. And so far as I could see, not a single one of the fighters who had attacked so valiantly by land, sea and air, was left to tell the tale.

CHAPTER V

Slavery of the Mind

THE scene faded. Once more I was back in the laboratory with Hax. His colorless, glass-like eyes leered at me through the huge lens.

"You see," he said, "how hopeless it is for mankind to resist us. We are invincible."

"You have but defeated the forces of two small nations," I replied. "The earth has not yet begun to fight. Her scientists will find a way to defeat you."

"Her scientists are weak-minded children, compared to the most ignorant Snals," he said, contemptuously. "They are creatures of a lower order, fit only for slaves. And you will go now to begin your slavery with the rest."

Two Teks suddenly appeared behind me. Seizing my arms, they lifted me from the chair and hurried me away. As I left the laboratory the mocking laughter of Hax followed me.

The Teks took me out of the building the way I had come. One of the queer, rolling vehicles was waiting. My hands were forced down on the central rail, which glowed as if with some radioactive force. They stuck there, and try as I could, I was unable to remove them.

We passed through the gates in the wall, and threaded the city streets to a great, large structure near the docks. A number of other similar vehicles with glowing hand-rails were waiting around the building. And thousands of prisoners, disembarking from arriving globes, were being herded into this building by the Teks.

Others were being driven out of another entrance. I noticed that some were forced to grasp the shining hand rails, while others were bound, hand and foot, with wire, and stacked on the vehicles like cord wood. At first I saw only soldiers, sailors and airmen, wearing the uniforms of Nicaragua and Honduras. But the globes presently began to disgorge loads of civilians—men, women and children, whites, mestizos, Indians and Negroes, evidently taken in raids on the nearby territory.

The vehicles, loaded with their human freight, and each presided over by a Tek, began to form in a long line. When a train of about six hundred had been formed, we left. All traffic had evidently been stopped to let us through, for although I could see many vehicles on the other streets those through which our leader piloted us were deserted.

The vehicle in which I was riding was a half mile or so behind the one which led the procession. About half of the vehicles were loaded with the bound prisoners and half with those held by the luminous hand rails. A load of the poor bound wretches was just ahead of me. I could hear their piteous moans. Their wrists and ankles were so tightly bound with wire that they were cut and bleeding. And those at the bottom of the pile were crushed by the weight of the ones above them.

Our train soon passed through the city, and out upon a great metal causeway that stretched above a weird and unusual landscape of grotesque thallophytic growths. These were in orderly array, and tended by busy Teks. Among the cultivated plants I saw a number of varieties of gigantic slime moulds. They were cultivated in pits about twelve feet in diameter, set in rows with metal runways between them. Some of the pits contained great masses of naked, polynuclear protoplasm—the plasmodia which would later develop into adult slime moulds.

As we passed along through these fields I noticed that, from time to time, one of the cars containing the bound human beings was shunted off the causeway and along one of the tracks which ran between the plasmodium pits. Watching one of these as we sped past, I saw the Tek lift a bound human being and hurl his helpless victim into one of the pits. At the next pit he stopped and repeated the process. The grim prophecy of Hax was already coming to pass.

The men who were fastened on the vehicle on which I rode numbered about twenty. There were five naval officers, five seamen, eight Indians and two Negroes. The

man just ahead of me wore the uniform of a lieutenant.

"What did they do to you in the round building, Señor Lieutenant?" I asked him in Spanish.

"We were given a test to see if we could control those metal creatures, señor," he replied. "Those who could not pass the test—many of them women and children—were bound with wire. It is horrible. What are they doing with them?"

I told him. He ground his teeth and cursed luridly. Presently he asked:

"And what will they do with the rest of us?"

"As long as we can serve," I replied, "we'll probably be slaves. After that, food for the plasmodia."

Of the six hundred vehicles that left the city, about three hundred drew up before a great, dome-like building. The others, with their wire-bound victims, had been shunted away to the slime mould farms.

A great circular door opened in the apparently solid wall of the building. The Tek who presided over our vehicle shut off the current in the rail, releasing our hands. Then we were herded into the building with the others—whites, mestizos, Indians and Negroes, men and women, mixed indiscriminately.

The first room in which we found ourselves was an immense lobby which encircled the building. This room proved to be the living and sleeping quarters of the Snal workers, whose places we human slaves were to take. While one-half of the workers labored in the inner rooms, the other half slept and took recreation in this apartment. Their bunks were metal cylinders about three feet in diameter and seven feet long, stacked three rows high along the outer wall. They contained no padding or covers, and were as private as gold-fish bowls. The tired workers, without bothering to disrobe, crawled into them and stretched out on the cold metal when ordered to do so by their overseers. They crawled out again to receive their meagre rations and to resume work when their sleep period had elapsed.

The overseers wore round, pointed helmets and complete suits of scale-armor made from a dull-surfaced, dark brown metal. Their weapons were paralyzing ray tubes, like that which Zet had used on me, and queer, double-edge weapons, the blades of which looked like two meat-axes welded together, back to back, with handles about eighteen inches in length hooked at the end to hang from their belts; they carried slender metal rods about eight feet in length, the pointed ends of which continually glowed at a red heat.

WE were forced to disrobe and don the coarse aprons. In each apron were two pockets, one of which contained a glass flask and the other a shallow bowl. As fast as we donned our slave raiment, we were driven in single file past a counter, where we were issued water in our flasks and a thick, jet black porridge, which I afterward learned was made from the spores of a species of slime mould, in our bowls. It had a rank, musty flavor, and I could not stomach it at first, but as it was the only food given us, we had to eat it or starve. Most of us eventually got so we could consume the portions served us, although I doubt if anyone really learned to like the stuff.

After we had been given our garments and rations, we were herded into the immense central control room. The floor of this room rose in circular concentric terraces conforming to the contour of the domed roof above, and ending in a small round platform occupied by the chief overseer, who could thus look down on the entire workroom.

Set against the faces of the terraces were curved tables. Twenty workers were seated at each table, gazing into their control globes and gripping their electrodes. Each table was presided over by an armed and armored overseer, who gazed into a large globe mounted on a tripod, in which he could watch the collective activities of the Teks controlled by his workers. A worker, caught shirking or making an error, was punished by a searing touch from the red-hot point of the overseer's long rod.

I was assigned to a seat between two Snal workers, and noticed that this arrangement was maintained with the other slaves—first a Snal, then a human slave. The young lieutenant who had ridden on the same vehicle with me was seated just beyond the Snal at my right.

At a sharp command from the overseer, I grasped my controls and gazed into my globe. I instantly found myself a Tek, operating a gigantic mechanical shovel that was scooping up what looked like white sand from the floor and walls of a huge pit and dropping it into vehicles with globe-wheels and hopper-shaped bodies. These vehicles, each operated by one Tek, moved past in a steady stream as fast as I filled them with the white sand. One immense shovelful sufficed to fill each vehicle.

Other Teks labored nearby with similar mechanical shovels. The vehicles, I noticed, were all moving toward a great structure some distance away, from which columns of smoke or vapor were rising, and from which, at times, lurid flashes of light gave a blood-orange tint to the surrounding landscape and to the vapors that floated beneath the great vault, high overhead.

It dawned on me that this white sand must be a metallic ore—a salt of some metal—and that the building to which it was being taken was a smelter or refinery.

As I sat there working, it seemed that I developed the faculty of being two places at once—thinking two sets of thoughts at the same time. Objectively, I sat and worked in the control room. Subjectively, I operated the mechanical shovel. It was like playing a piano and singing at the same time—or perhaps more like singing an air and playing a violin obbligato. Doing two things at once, one objectively, the other subjectively, yet conscious of doing both.

The Snals had permitted me to retain my wrist chronometer, though my radiophone was taken from me. They had learned its use when Art Reeves had sacrificed his life to warn me—all to no avail.

The chronometer showed that our day was divided into two periods of about ten hours each—a work period and a rest period. The work period lasted for ten solid hours without intermission, nor were we permitted to take our hands from the electrodes even for an instant during that period. When the work period was finished, the second shift of workers was ready to take our places. We were then issued water and black porridge, and permitted to roam about in our living quarters for about an hour. At the end of the hour, however, we were peremptorily ordered into our sleeping cylinders for eight hours. We were then ordered out, fed and watered, and at the end of another hour, marched into the control room to relieve the shift that had been working while we slept and rested.

The division in which I worked, labored unremittingly

at digging and loading a seemingly endless desert of white ore. I learned from workers in other divisions that some of them were engaged in smelting the ore, some in building metal cities and warehouses, others in building flying globes, and still others in transporting materials and prisoners through the streets of the subterranean cities and along the metal causeways that connected them.

With the aid of my chronometer I kept careful track of the outer world time.

Within two weeks after my arrival, every worker Snal in the building had been replaced by a human slave. The only Snals remaining were the armed and armored overseers.

I often thought of Dolores Monteiro as I had last seen her, shuddering before Zet, the slimy emperor of the nether world, and wondered what had become of her. She was a lovely creature, and unspoiled, despite the adulation she had always received.

Although certainly not human, Zet greatly resembled a human being in form. He had spoken of an experiment—an attempt at crossing the races. And I feared that the beauty of this girl might have tempted him to force her into his own seraglio. The thought was revolting. And the uncertainty was almost as maddening as the definite knowledge would have been.

During the hours after and before the sleeping periods, I used to walk around the building, scanning the faces of all the white females. At the end of a month I was still looking for her, but looking hopelessly.

Then, one day, I was startled by the familiar sound of a girl's voice behind me!

"Señor!"

CHAPTER VI

The Treachery of Lak

IT was Dolores Monteiro who had called to me. She was wearing the coarse slave apron, but even in this rough garment she was ravishingly beautiful. My heart stood still as I looked down into her eyes for a moment, scarcely realizing that the object of my long quest stood before me.

"Señorita!" I exclaimed. "I've been looking for you everywhere."

"And I for you," she replied. "When were you sent here?"

"That first day," I answered. "And you?"

"Shortly after you left me standing before Zet," she replied. "But this is an immense place—almost a city."

"Then Zet did not harm you?"

"No," she replied, "but I will never forget the feel of his cold, slimy hands on me." She shuddered at the memory. "It was nauseating. Ugh!"

"Yes, I know," I said. "But didn't he do or say anything else?"

She answered me, almost in a whisper.

"That is the reason I had to find you. He did say something else, and ordered me not to tell. To disobey him is death, they say, but I must confide in you."

"Don't say it," I warned her.

"But I must. There is a reason. He said I would be sent away with the other slaves for the time being, to learn to work and to become accustomed to the ways of his people. But he said, also, that he would give positive orders that I should not be harmed, for someday soon he would honor me by sending for me."

"You mean——"

She nodded despairingly.

"I should kill myself at the first opportunity, of course, but I wanted to find you first—to tell you, the one person I know and can trust in this horrible place, so that if you live and some day meet my father and mother you can tell them the truth. They might otherwise think that I—that I went willingly. And there is no hope of escape. So you see why I had to tell you."

"'While there is life there is hope,'" I quoted. "Don't give up. Will you meet me at this spot after the work period?"

The call to work sounded as I spoke.

"I'll be here," she replied, and hurried away.

Some moments later I sat down at my work table, my senses in a whirl. My electrodes lay untouched before me, until a searing pain on my bare shoulder and the smell of my own burning flesh brought me to a realization of my surrroundings.

"To work, quickly!" snarled my overseer, "or there will be a worse burn."

I snatched the electrodes, and with my shoulder smarting from the touch of the red hot rod started my Tek at its apparently endless task of shoveling white ore.

The young naval lieutenant, whose alert, snapping, black eyes missed very little, saw my punishment and forgot, for a moment, to watch his globe. During that moment I saw his Tek topple from the platform on which it was working and fall into the pit.

With an angry roar the overseer seared the lieutenant's back.

"Dolt!" he thundered. "Get that Tek up at once, or I'll burn you to a crisp."

What happened after that took place so quickly that it was all over in less than a minute.

With a roar as angry as that of the overseer the peppery young lieutenant dropped his electrodes, stood erect, and sprang at the throat of his tormenter. So quick and unexpected was the attack that he was almost upon the astonished overseer before the latter realized what had happened.

Snatching his paralyzing ray cylinder from his belt, the Snal pointed it at the lieutenant, freezing him in his tracks. Then he stepped back and with a fiendish grin at his helpless victim thrust the red hot point through the brave lad's heart. Withdrawing it deliberately, he shut off the paralyzing ray, permitting the body to slump to the floor.

This exhibition of cruelty so filled me with rage and revulsion that I was tempted to hurl my globe at the Snal's head, and follow the throw with an attack. But the thought of Dolores deterred me. She would be waiting for me—expecting me to meet and help her.

Another slave was thrust into the lieutenant's place, and his body was carried out by two Teks.

"Take heed, slaves, from the death of your fellow," said the overseer, "and rebel not against authority lest you share his fate."

Dolores met me at the beginning of the rest period, and we went together for our food and water, then sat down on the stone floor to eat.

Before we had finished eating, a number of Teks came in, bearing the sections of a huge metal screen, which

they welded smoothly together and set up in the middle of the floor. Several Snals came a short time thereafter, and connected it with a complicated-appearing machine, while the slaves flocked curiously around.

When their work was finished, a life size image appeared on the screen. It was Zet, ruler of the nether world, his emerald diadem sparkling above his slimy features.

He began to speak and every voice was hushed. To me, he seemed to be speaking English. Dolores told me afterward that she thought he was speaking Spanish. And a Misskito Indian I later interrogated was positive the great "Glass Face" had spoken his native dialect.

Zet told us that the screen had been installed for our entertainment and information, and that, through it, he would keep us constantly posted on the progress of his conquest of the world. We would thus be made to realize, he said, how hopeless it would be for us to rebel against the fate which nature had intended for us—that of serving the Snals, who were as superior to us as we were to the beasts we had domesticated. He ended by promising that those of us who served faithfully and well would be rewarded later, when his empire was established, by easier work and positions of power among our fellows.

Zet's image faded from the screen. It was followed by that of another Snal—a short, stocky individual, whose ornaments were richly powdered with jewels.

"I am the Voice," he said. " I speak for Zet, Lord of the Inner and Outer Worlds. Behold the progress of his conquests."

THE image faded and a large map of the Americas appeared on the screen.

"The portions marked in green are under the dominion of Zet," said the Voice. "He moves slowly but surely, taking what he wants when he wants it."

From the northern border of Mexico, through Central America, Colombia, Ecuador and Venezuela, the map was shaded green! And all this in thirty days!

The map faded, and in its place we were shown moving pictures in full color. Managua, rebuilt capital of Nicaragua, was shown first. In the heart of the city rose an immense metal dome—shiny and incongruous, like some false growth appearing on the fair body of the earth. We were shown a glimpse of an inner room of the great dome. President Monteiro and his staff were here, guarded by Teks and bullied by an armored Snal who seemed to be Zet's vice-regent of the nation. There were other, flatter domes near the outskirts of the city. Beneath these, beds of slime mould had been planted. They were being tended by human slaves, and fed both with the bodies of men and domestic animals. Just outside this ring was another, in which were taller domes like the one we were in—control buildings in which human slaves toiled with their minds, that the Teks might work the will of their Snal masters.

We saw flashes of other capitals, each with its great shining dome centrally located, and its encircling rings of metal-covered slime mould beds and control buildings. Bogota, Caracas, Quito, Mexico City, San José, San Salvador and the rest, all were under the yoke of the conquerors.

Teks rolled about the streets—swarmed everywhere, searching out human victims to be dragged before the conquering Snals, who remained in their huge metal buildings or in the flying globes. Tiny Teks no larger than pin heads spied on the people unseen. Conspirators against the tyranny were thus quickly detected, captured and fed to the plasmodia.

We were shown the northern battle front, where the United States had stretched a huge army from gulf to ocean to protect its territory. It was not a battle, but a farce, in which the Teks were sent out at will of the controlling Snals, to drag men from the trenches, the tanks, or the decks and cabins of aircraft, and whirl them away in the flying globes, against which the most powerful weapons of the world were powerless. New weapons were being tried—oxy-acetylene flame-throwers—that would cut through steel plates as if they had been paper—bombs, loaded both with nitric and sulphuric acids, in the hope that these might prevail against the obstinate metal. But they had no more effect on it than water has on glass.

Some of these things we saw. Some were told to us by the Voice. But I do not think there was a man or woman in the building who was not convinced of the truth of all of them, and the utter hopelessness of our situation. Man's knell of doom had sounded. His place in the sun was being slowly but surely wrested from him by these slimy intelligences of the nether world.

The South American republics had also extended a great defensive line across their continent. But it was even less of an obstruction to the conquerors than that of the United States.

After each work and sleep period, Dolores and I met at the same spot. We would eat our block porridge together, then go and stand in front of the screen to learn the latest news of the earth's conquest.

In another thirty days the southern half of the United States and more than half of South America were under the sway of the Snals. The opposing armies had been completely routed, and most of their field equipment destroyed. Our screen was tuned in with exploring globes flying over the areas as yet unconquered. And they showed people fleeing northward in every means of conveyance at their disposal. Canada swarmed with refugees. Air- and water-liners loaded to capacity were leaving for Europe, Africa and Asia. And the advance of the metal menace continued steadily, relentlessly.

Dolores came to mean much to me—more than the whole world. I had never told her, had not more than touched her hand. But she could do more with her eyes than can most girls with arms and lips.

It was because of the hopelessness of our situation that I did not speak to her of love or marriage. I suspected, however, that she knew of my love, and dared to hope that she returned it.

I always looked forward to my meetings with her as the only bright spots in this career of mental drudgery. Like those of the other slaves, my brain was being turned into a machine to work the will of the Snals. And it might have become as dulled and listless as did the others had it not been for her bright companionship.

During those first two months the Snal overseers began to select women from among the slaves to share their quarters with them. Each overseer had a private apartment, jutting out from the outer wall of the building at its base. These apartments were set at intervals, clear around the building, and where their round doors were placed, no sleeping cylinders were piled. Some

went fearfully, under the threat of the red hot torture rods. But many preferred to die in agony.

A number of overseers had asked for Dolores—my own, a tall fellow named Lak, among them. But the head overseer had his orders. She was to be saved for Zet until such time as the ruler should send for her, unless—— Every overseer knew that she had been commanded to keep this secret from the other slaves—that if she disobeyed, death would be the penalty. And each overseer combined in his person, the powers of judge, jury and executioner.

Many times I noticed Lak watching us furtively when we were together. Once I turned, and saw him standing close behind us as we watched the news screen. But even then, I did not guess his purpose.

It was, when I had computed that about two months of earth time had passed, that I eagerly sought our rendezvous after a work period, but Dolores was not there. I waited more than ten minutes, but she did not put in an appearance. Then I noticed a Misskito Indian, seated nearby licking his porridge—smudged fingers and eyeing me significantly.

"You look for white señorita?" he asked.

"Yes. Have you seen her?"

"In there," was the laconic answer. He pointed with his porridge-smeared thumb to the door of Lak's apartment.

CHAPTER VII

The Subterranean Jungle

I LOOKED cautiously about me. None of the Snals seemed to be watching my movements. Endeavoring to appear unconcerned, I walked slowly toward the door of Lak's apartment. It took less than a minute to reach the edge of the pile of sleeping cylinders. Again I glanced slowly around. So far as I could see, neither Snal nor slave was paying any attention to my movements.

Dodging into the passageway between the piles of cylinders, I tiptoed to the door. It was closed, but gave when I tried the fastening. I opened it cautiously for a little way. Lak was standing with his back to me, holding Dolores by her shoulders. Neither could see me.

Entering soundlessly, I closed the door.

Lak was saying:

"You have earned death, slave-girl, but I can save you. Only I heard you tell the secret of Zet to the slave-man. You must make your choice now—your life or the love of Lak."

I had heard more than enough. With a single bound, I stood beside them. Seizing the armored shoulder of the Snal, I spun him half around.

His burning rod stood in a rack, but his chopper and paralyzing ray cylinder still hung from his belt. With a grunt of surprise and anger, he grabbed for the latter. But his visor was up and I swung for his face.

The result was astounding—and sickening. My arm was buried, half way up to my elbow in his great round head. My fist had crashed through his nose and the frontal bones of his face, clear into his huge, mushy brain.

With a feeling of intense disgust, I withdrew my arm, and the metal-clad body clanked to the floor. As best I could, I cleaned the slime from my arm with a coverlet dragged from Lak's luxurious sleeping cylinder.

Dolores, who had bravely faced her persecutor to the end, now collapsed, with her face in her hands, and began weeping softly. I was about to try to comfort her, when I noticed something sputtering on the floor at her feet. Puzzled, I bent forward to investigate. A great tear trickled down between her fingers—fell to the metal floor. And where it struck, the sputtering commenced anew, while beneath it a patch of white crystals was forming.

The floor, unlike that of the main building, was made of the white metal that had defied shells, solid shot, oxy-acetylene flames and two of the strongest acids known to man, yet here it was, changing to a white powder beneath a woman's tears. After each tear drop fell the sputtering soon ceased. But the white spots spread with amazing rapidity. Presently, several of them ran together, then collapsed, revealing the wild thallophytic growths of subterranean jungle about ten feet below the floor. The hole widened rapidly, the metal flaking away in white crystals. It undermined the body of Lak, and it fell into the undergrowth while Dolores and I looked on amazed.

"A way out!" I exclaimed. "Come on!"

After dropping Lak's burning rod, I swung down on the edge of the still-widening orifice, and let go, alighting in the muck among the soft growths, with scarcely a perceptible jar.

Dolores bravely followed, and I caught her in my arms.

I stripped off the overseer's belt, which contained his paralyzing ray cylinder and chopper. When I had it strapped around my waist, I caught up the burning rod, and we hurried away through the grotesque fungoid growths.

A few steps took us out from beneath the building, which stood on metal stilts set into the soggy soil. As we emerged under the luminous dome of this strange underground world, the light grew much stronger and the vegetation taller.

Soon we were hurrying through a forest of thick slimy trunks, some of them eight to ten feet in diameter at the base and fifty to sixty feet in height—the stems of colossal mushrooms. Often we found our way blocked by these immense fungoids which had crashed to the ground, and for the remains of which, lichens and slime moulds of many varieties contended. Giant mosses of endless shapes and hues formed most of the undergrowth, and algae dominated the thousands of stagnant pools. From time to time the immense, umbrella-shaped caps overhead opened their gills to discharge millions of spores that glittered in the queer phosphorescent light as they swirled downward to settle over the weird landscape.

The animal, as well as the vegetable kingdom, was represented in variety and profusion. The lower orders dominated in size as well as in numbers. Fat, gray slugs, three feet and more in length, fed on the juices of the various plants about us. Snails of infinite variety and immense size left their slimy trails everywhere. I recognized glass snails, amber snails, agate snails, and most striking of all, great ramshorn snails as tall as camels.

Insect monstrosities buzzed busily about, or scampered over the moss. An immense thousand-legged worm,

fully twenty feet in length, startled us as it crossed our path. A huge green beetle as large as a Shetland pony charged us with its huge four-foot mandibles distended, but backed up and hastily scampered away at a touch from my searing rod. A mosquito, as large as a crane, buzzed about us for some time, until I killed it with a lucky thrust through the head.

The air was heavy with the musty odors of the fungoid growths, the sickening charnel scent of the slimy creatures that lived in their moist depths, and the reek of decaying organic matter.

Stumbling, slipping, sliding, sometimes sinking knee-deep in clinging muck or splashing through water above our waists, we pressed onward, our sole desire being to put as much distance as possible between ourselves and the slave quarters.

As we hurried along I pondered much on the miracle that had wrought our deliverance from the apartment of Lak. What could there be, I wondered, in this woman's tears, that had destroyed a metal which had defied projectiles, explosives, heat, and powerful acids? In this solution of this mystery lay the key to the door of knowledge which, if once opened, would deliver the world from bondage.

And why, I wondered further, had this mircale not been wrought before? Surely many of the captured woman and children had dropped tears in the metal globes, on the metal vehicles in which they had been hauled, and on the tentacle-like arms of their captors. Then I recalled that the room in the globe that had brought me in, a prisoner, was of *brown* metal, as were the bodies of the vehicles in which we had been carried, and the highways over which we had traveled. The arms of the Teks, although of white metal, were of a duller cast than the globes and heads, as were the tables, globes and electrodes in the control room. The floor of the building, except in the private apartments of the overseers which jutted out over the jungle, were of stone.

But all this did not explain the enigma.

After five hours of wearisome travel, we were glad to stop and sit down on the moss for a breathing spell. I took a drink of water from my flask. It was nearly half full. I shuddered at the thought of having to drink the foul, stagnant water we had encountered. Dolores also drank some water and replaced her flask in her apron pocket.

"I'm hungry," she announced. "Do you suppose any of these plants are edible?"

"No doubt," I replied, "and it's equally probable that some of them are so poisonous that a mouthful or two would prove fatal. The question is, which are poisonous and which are edible. We have no way of knowing."

"Then what are we to do?"

"We may run across some of the varieties of slime moulds that the Snals cultivate for food," I replied. "Their spores are good to eat. And in the palace gardens I saw some gigantic morels. I think we would be safe in using these for food if we could find any. In the outer world the morel is the one mushroom form that is never poisonous."

"In that case," she said, "let us look for morels."

Rested by our brief pause, we resumed our journey. Presently the character of the vegetation changed as we came out of the marshy country to higher and drier ground. The moss was replaced by short, white snake grass. And huge, jointed reeds began to take the place of the tall mushrooms.

We had not gone far when we came to a group of large mounds uniformly about fifty feet in diameter and twenty feet high.

"I'm going up and have a look around," said Dolores, and suited her action to her words by scampering up the side of the mound. She had not taken more than five steps when one foot broke through into a compartment underneath. She withdrew it with a scream of pain, and came running toward me, her knee bleeding. Then a white thing about eighteen inches in height, popped out after her and pursued her on six rapidly moving legs. Behind it came another and another, and I recognized them for what they were—giant termite as large as pet bulldogs and ten times as dangerous.

I ran toward her, my burning rod ready for action, but before I reached her a veritable army of the formidable creatures came rushing toward us from around both sides of the mound, their great hooked mandibles snapping menacingly.

"No use to argue with those things," I shouted. "We wouldn't have a Chinaman's chance. Can you run?"

"And how!" she replied, passing me like a bullet.

I was not slow to follow, but I soon saw that we were being outstripped by the swift, six-legged creatures behind us, and that it would only be a matter of a few moments before we would be pulled down and torn to pieces.

"Climb something," I cried. "It will be our only chance to hold them off."

Dolores leaped for the nearest jointed stalk, and scrambled up, I at her heels, just as the foremost termites came snapping up behind us.

I thrust the point of my burning rod into the open mouth of the leader, and sent it tumbling back on those behind it. Then an astounding thing happened. There was a roar overhead as if a dozen helicopter blades had suddenly gone into action, and the stalk to which we were clinging left the ground with amazing rapidity.

I glanced upward and saw the reason. Instead of a scaly plant stalk, we were clinging to the slender, segmented body of an immense insect! And already we were so high above the ground that to let go would mean certain death!

CHAPTER VIII

Monsters of the Nether World

THE huge insect to which we were clinging flew off with incredible speed. Its immense wings, which when quiescent I had taken for the spatulate leaves of a strange subterranean plant, whirred so rapidly that they were invisible. The creature itself greatly resembled a titanic dragon fly, with its massive head, great bulging eyes, and long, relatively slender body. It flew at an elevation of about a thousand feet, and watching the ground, I calculated that it was carrying us at a speed of over a hundred miles an hour.

Clinging to the rim of the huge segment with one hand, and gripping the round body with both legs, I watched the rapidly changing landscape beneath us. Presently, all signs of vegetation ceased, and we were flying over a barren, gleaming white area of dunes and hollows.

On the next segment in front, Dolores was clinging tightly with hands and arms, and I noticed that she, too, was anxiously watching the landscape below. I shouted to her, but she could not hear me because of the whirring of the huge wings. And I could not creep nearer to her without danger of losing my grip on our living aircraft and pitching to sudden death below.

So occupied was I in watching the landscape beneath that I did not notice the immense black thing, flashing downward at us from above, until it struck. Huge teeth sunk into the thorax of the giant dragon fly, just back of the head. Its wings quivered, then hung limply. It was a swift, clean kill. We were borne swiftly aloft in a steep spiral and I had an opportunity to observe the thing that was carrying us. It was an immense, black-skinned hairless bat. The body of the insect trailed almost vertically, making it much more difficult to hang on than when it had been flying horizontally. It appeared that the giant bat had not even noticed us, taking us for part of its victim's body.

As we spiraled higher and higher, the light grew stronger above us, while the outlines of the ground below became more and more blurred and indistinct.

Up and up we went through the drifting, diaphanous mists until we were just under the luminous dome of this weird nether world, fully five miles above the ground. My eyes were dazzled by the brightness of the rugged, luminous, and probably radioactive stone that formed the vault.

The bat hovered for a moment beneath a huge jagged opening in the dome. As it did so I saw that there were a number of similar openings nearby. Then it flew upward and to one side, alighting in a self-illuminated cave about a hundred feet square.

I wondered why the monster had not devoured its victim on the wing as outer world bats habitually do, but I realized the reason when two of its offspring, which had been hanging upside down from a ledge at the back of the cave, fluttered to the floor and rushed toward the parent, screeching and flapping excitedly.

The adult bat laid the insect on the floor with us still clinging to it, then turned and dived back through the opening.

Judging by the size of the parent, the two youngsters that were rushing toward us were about a quarter grown. But this did not prevent them from being exceedingly formidable antagonists, for each stood more than ten feet in height, and was armed with long sharp teeth as well as wicked looking claws on wing joints and hind feet. Dolores and I both sprang to our feet and backed away as they pounced on the insect and began feeding voraciously, as if each feared that it would get less than the other would.

My first impulse was to look for some way of escape while the two immense youngsters were occupied with their feast. Bidding Dolores secrete herself behind one of the boulders that cluttered the floor, I made a careful search, circling behind the young bats and returning in front of them. They watched me with their black, beady eyes, but evidently did not think me quite as tempting a morsel as the insect.

Having assured myself that there was no way out of the cave except that by which we had come, I returned to the boulder with the beady eyes of the bats still following me as they finished the remains of the ill-fated dragon fly.

Our situation appeared utterly hopeless. There we were, five miles above the surface of the nether world, and we knew not how many uncounted miles below the surface of the earth, imprisoned with two hungry beasts larger and more formidable than the greatest of the outer world carnivora. Moreover, we might expect at any moment, the arrival of one or both of the parents—creatures four times as large as the ones we now faced.

There seemed little question but that the young bats would attack us, and that was quickly resolved, for as soon as they had finished their feast and licked their chops for a moment, they came hopping and flapping toward us.

With Lak's paralyzing ray cylinder in my left hand, and his burning rod in my right, I leaped up on the boulder, behind which Dolores crouched.

As soon as they were within striking distance, both of them reached out to seize me, whereupon I held the one on my left with the paralyzing ray and lunged at the other with the burning rod. I struck for the eye, but the beast dodged and the point seared itself into the hunched shoulder, instead.

With a siren-like shriek of rage and pain the burned creature jerked back out of reach of the point, toppled on the edge of the entrance for a moment, and then fell, squawking and fluttering, down the steep shaft. As it had not learned to fly, it was undoubtedly dashed to pieces on the ground five miles below. At any rate, I did not see it again.

The other young bat, held by the powerful paralyzing ray, stood helplessly while I plunged the point of the burning rod into its heart. Then, as I withdrew the rod and shut off the ray, a shudder ran through its frame and it toppled over on its back, dead.

ALTHOUGH we had vanquished our immediate enemies, we were a long way from being out of our predicament.

Dolores came out from behind the boulder, and together we examined the fallen monster.

Presently she said:

"Tell me the truth, Wallace. Is there no way out? No hope of escape?"

"I'm afraid not," I replied.

"Then we are to die here together. It doesn't matter how. We'll be slain by the mother bat when she returns, or perhaps by her mate. Even if you conquer both monsters with the weapons of Lak, we're trapped here to die of hunger and thirst. In one case it will be a matter of a few hours, the other a few days. Am I not right?"

"It looks that way," I replied, kicking absently at the tip of one of the webbed wings, my head turned away to hide my feelings.

"Wallace! Look at me!"

I turned, and she came up very close, her glorious face upturned to mine.

"Wallace, isn't there something you would like to say to me before we—are taken by death?"

There was that in her eyes which sent the hot blood coursing through my veins, and made me forget the peril in which we stood. The burning rod clattered to the floor of the cave as I crushed her to me—claimed her sweet lips.

"But, Wallace. You have said nothing," she panted.

"I can't make you pretty speeches," I replied, "nor can

I croon sweet love songs. But I love you, Dolores. You know that now."

"I have known it all along," she confessed, "but I wanted to hear you say it. *Dios*, how I love you, my big American! And we are to die so soon."

Her arms went around my neck—clung there, and she buried her face in my shoulder, weeping softly.

Desperately I looked about me. There must be a way out. I must think. I must plan.

Suddenly an idea came to me.

"Don't cry, dear," I said. "I think I've hit on a plan."

"What is it?" she asked eagerly.

"There is enough material in the webbed wing of that young bat to make a parachute that will carry us both to the ground," I said, "and I'm going to try to make one."

"I'll help you," she replied. "Let's work fast. The mother bat may come back at any moment."

Using Lak's keen, two-edged chopper, I quickly severed the immense wings from the body. In the webs there was material enough for our purpose, and to spare. I cut a number of long strips to serve as rope, and with these, Dolores stitched the larger pieces together, punching the holes with the tip of the burning rod.

When I had exhausted the supply of web which we could spare for this purpose, I skinned the immense carcass, and cut the hide into strips two inches in width. I fastened the ends of these around the edge of the parachute, while Dolores finished her job of fastening the larger pieces together.

This work completed I drew all of our guy straps together, and tied them to a ring-strap, cut trebly wide that it might stand the extra strain. To this I added a strong loop on each side, forming a swing seat for each of us, and we stepped back to view the result of our labor.

It appeared exceeding crude and awkward, but it would be strong enough.

"Are you ready to make the jump?" I asked.

I slipped the loop of her swing strap around her, cautioning her to hold on with both hands.

"We'll drag the whole thing clear up to the edge," I said, "then jump out away from the ledge as far as possible. Otherwise the 'chute may catch on the edge and swing us back against the face of the rock."

Luck had favored us thus far by the prolonged absence of the mother bat, and I wondered, as I arranged the folds of the 'chute on the rim of the abyss, if it would fail us now.

For a moment I strained Dolores to me in a farewell kiss. Then I caught up the burning rod, and with a: "one, two, three!" we leaped.

For several seconds we hurtled downward at a breath-taking speed. The walls of the shaft vanished, and we were shooting down through the mists of the nether world sky, our speed unslackened. "It hasn't opened," I thought. "We're doomed." But even as this thought came to me, the guy straps suddenly tightened with a jerk. One of them snapped and fell down, trailing its wet inner surface over my shoulder. Our speed slackened. A few seconds more, and we were gliding smoothly downward. The immense web that had been designed to support the huge body of the bat in flight easily sustained us.

A CRY of exultation came to my lips, but it quickly changed to an exclamation of horror as I suddenly saw, flapping toward us, the immense black bulk of the mother bat. She was carrying a huge beetle in her mouth, but dropped it as she came closer and scented the hide of her dead offspring. With a horrible shriek, more powerful and ear-splitting than the sound of a steam siren, she dived straight at us, her immense maw gaping, her lips drawn back in a hideous snarl that revealed her big, ugly teeth.

I whipped the paralyzing ray cylinder from my belt, and gripped both it and the strap at my left with my left hand, while I couched the burning rod beneath my right arm. I had my misgivings as to whether or not the rays would have any effect on so huge a bulk, but it was our only hope.

To my surprise and relief, it worked. The giant bat, unable to move her wings, turned over and began hurtling groundward in a nose dive. But she had not fallen far before the rays ceased to affect her, whereupon she righted herself and came back at us.

Again I turned the rays on her and again she plunged downward, only to right herself and come back as fiercely as ever. She repeated the process persistently, and to my horror I noticed that she was able to get a little closer each time. The battery was growing weaker.

Presently she came so close that I thrust the burning rod into her mouth. With a snarl, she clamped her huge teeth down on it, snapping the metal shaft as if it had been matchwood. She opened her mouth once more and shook her head, attempting to dislodge the searing point, but it had already passed her throat, and was burning its way down into her vitals.

With a horrid, gurgling scream, she went into her last nose dive, falling like a plummet. I saw her strike the ground several seconds later, but we were drifting in an air current that had, in the meantime, carried us some distance to one side. I noticed for the first time that we were above a huge expanse of glistening, barren white dunes. A short time thereafter we alighted, sinking to our ankles in a substance which I readily recognized—the white crystals which my Tek had been loading these many days, to be hauled to the smelter. It was the material from which the Snals manufactured their miraculously hard metal.

Disentangling ourselves from our straps, we set out over the rolling dunes. As all directions were alike to us, we set our faces toward what looked like a rugged mountain range, some of the jagged peaks of which pierced the clouds. Our water supply had dwindled to a swallow apiece. And we were ravenously hungry.

For hour after hour, we plunged onward, through the weird light of the changeless day. We stopped once, exhausted, and slept for twelve hours by my chronometer. Upon awakening, we drained our water flasks, and pressed forward once more. But so great was the distance of these mountains, which at first had only seemed a few miles away, that they appeared to recede as we advanced toward them.

Another four hours of walking, however, made the outlines of the mountains bulk much nearer. And where there are mountains, there are usually springs or streams. After a brief rest, we set forth once more. But it was not long before Dolores staggered and fell. I tried to pick her up, and fell beside her. My strength

was fast waning. I tried to murmur a few words of encouragement to her, but my lips were dry—my tongue so swollen that they sounded like the muttering of a drunken man. It did not matter, however, as she had swooned away.

After a brief breathing spell, I arose, and taking Dolores in my arms, proceeded, carefully conserving my strength and pausing at short intervals to rest.

We were less than a mile from the nearest mountain when Dolores regained consciousness. She immediately insisted that I set her on her feet. I did so, and found that, after her rest she could make better progress than I.

I was floundering along, so exhausted that I staggered as if intoxicated, when suddenly she clutched my arm.

"Look!" she cried. "Water, just ahead!"

Together we stumbled out of the loose sands of the white desert to a flat formation of lava rock. About half way between us and the mountain we had made our objective, a small circular pool of water gleamed in the weird light.

The sight renewed my strength, yet it seemed ages before we reached the side of the sparkling pool.

"Take it easy," I cautioned. "Bathe your face first, and sip slowly."

We threw ourselves flat at the edge of the pool. I bathed my parched face, then sipped up a few drops from the hollow of my hand. But scarcely had the liquid entered my mouth than I spat it out in dismay. It was loaded with salt. Glancing at Dolores, I saw that she had made the same disappointing discovery.

I sat up wearily—despondently—and she crept over to me, resting her head against my shoulder.

"What a dreadful disappointment," she said.

Suddenly I heard a familiar clanking sound behind me. Glancing back, I saw a flying globe which had descended, not fifty feet from us. The clanking sound was caused by the long, segmented cable it had dropped. Down this cable swarmed a score of Teks. Then they spread out in a wide semicircle and ran toward us. There was no mistaking their purpose. And no question but what, if we were captured, Zet would impose the death penalty on both. It would be as well to die fighting.

I stood up, and with Lak's chopper in my hand, awaited the attack.

CHAPTER IX

The Escape

AS I stood in front of the briny pool, defiantly shaking the chopper of Lak at the advancing Teks, an idea came to me—an idea born of a theory which I had been pondering since the tears of Dolores miraculously opened our way to escape from the slave quarters.

Our metal enemies were almost upon us when I bent and, with my arm about her waist, helped Dolores up.

"Come," I whispered. "Into the water."

We turned and ran, splashing through the heavy brine. A few steps, and it reached our waists. The Teks splashed in after us. The circle was closing in at both ends. Suddenly their metal torsos began to sputter and pop, flaking away in a white powder wherever the brine had spattered.

"Splash them," I told Dolores, and used the flat of the chopper to deluge those nearest me. She bravely splashed those on her side. Presently a Tek stumbled—sank beneath the surface. Above the spot the water effervesced like champagne. Another sank—a third. Two that had only been slightly splashed tried to make the shore. I followed them, deluging them with brine. They sank down, sputtering and melting away in the shallows.

In less than five minutes the twenty Teks were a semicircle of wreckage, consisting mostly of neck, arm and leg tentacles, covered with masses of fluffy white crystals.

Dolores and I climbed up on the bank. Despite our thirst and weariness we felt refreshed by our salt-water plunge.

"If I could only fly that globe," I said, "we might still have a chance to get away."

"Why, I can do that," she said. "For the past forty work-periods I have controlled a Tek flying a freighter, which carried liquid metal from a smelter to a factory."

"Suppose there are more Teks aboard," I said.

"Not likely," she replied. "A crew always consists of twenty. The pilot could lock the controls and land with the rest."

"Well, we'll take a chance, but with a little preliminary preparedness," I said. "Let me have your flask."

She handed me her glass flask, and I filled both hers and mine with salt water. Pocketing one, and carrying the other in my hand, I walked up beneath the globe. The cable did not, as I expected, whip around my waist.

"I guess you were right, after all," I said. "Come on."

She came up beside me, but scarcely had she done so ere the cable swiftly wrapped around both of us, jerking us up through the round door. It put us down upon a floor of brown metal in front of a Tek that had one tentacle on the control board.

"So, small-brained ones, you thought to escape me!" The voice issued from the metal mouth, but I recognized it instantly. It was the voice of Zet, emperor of the nether world.

"We came near doing it, Zet," I replied. "For small-brained ones we didn't do so badly."

"Ha! Ha! Ha! What foolish bunglers you are, to be sure. To pit your puny intellects against mine. Ho! Ho! Ho! But I must bring you before me. I would pass judgment in person."

The tentacle of the Tek jerked a lever and the door clanged shut behind us. Our waists were still gripped by the huge tentacle, but I could move my arms freely. Suddenly uncorking the flask I held in my hand, I splashed brine on the spherical body in front of me and on the round head. Some of it ran down the head-hole into the mechanism.

Globe and head began sputtering furiously—flaking away as white powder.

"Fool!" said the metal mouth in the voice of Zet. "I pass judgment now!"

The arm tentacle jerked a lever, and the huge cable that encircled us, slowly tightened its folds, squeezing the breath out of us. Drawing the chopper from my belt, I struck at the tentacle that clung to the lever. It sagged, but hung on. Again I struck, exerting all my strength, and the blade severed it. Not being of the hard, white metal, it was vulnerable.

With a corner of the blade I struck up the lever. The

coils of the cables instantly loosed us. The Tek attempted to swing around—to use the other arm tentacle. But it was too far gone. It staggered and fell to the floor with a shower of white powder.

Dolores sprang to the control board. She pressed a lever, and the globe lurched violently as it sprang upward. She moved another lever, and we settled down to a straight course.

Above the controls two round lights hung on headstraps. Dolores took them down, handed one to me, and strapped the other around her head.

"If you will put that on," she said, "you can look out through any part of the globe with it. The invisible rays are turned on or off simply by raising your eyebrows."

I strapped on my light and found that it worked as she had said.

"Funny they left these things hanging here," I said "when the Teks have them already built into their heads."

"Sometimes the Snals fly these globes in person," she replied. "They are kept here for that purpose."

I raised my eyebrows and my light clicked on. The rays which emanated from it must have been effective only for a short distance, for, though they made the globe appear transparent, everything beyond it looked perfectly natural. Looking downward through the floor, I saw that we were above a jungle of primordial growths. I was gazing at the queer plants and beasts beneath us, when Dolores suddenly cried:

"A globe pursues us! We are discovered!"

"Slow up and let it come close to us," I said. "Then open the door."

I had corked, and was holding Dolores' flask, still half full of brine. The other globe shot swiftly up behind us.

I lurched over to the door and grasped the rail beside it, holding the flask poised in my other hand.

"All right," I shouted.

The door swung open. The other globe was now less than fifty feet from us. I hurled the flask and had the satisfaction of seeing it break against the pursuing globe, scattering its contents over the gleaming surface.

The door clanged shut, but I continued to watch the pursuing globe by means of my penetrating head light. A sputtering white patch instantly appeared where the brine had struck. Soon this was replaced by a gaping hole with rapidly widening white edges, from which fluffy crystals were flaking.

Dolores accelerated our speed and shot upward. The other globe attempted to follow, but it was rapidly losing power. Soon more than half of its surface had disappeared, exposing its mechanism and inner room, swarming with Teks. Another moment, and it hurtled groundward, burying itself in the soft muck of the swamp.

DOLORES straightened our course once more Ahead of us lay the metal city to which we had first been brought—the capital of the nether world. And about five miles to our right was a great cone of lava nearly two miles high. Above this cone was the gleaming mouth of a metal shaft which thousands of globes were constantly entering and leaving.

"Steer for the shaft," I said. "Perhaps we can bluff our way through to the outer world. They can't tell who is in this globe, can they?"

"Not unless they use the penetrating rays," she replied, "and they can only do that at close range. I don't think we can make our way through. However, Zet will expect us to try, and will be prepared."

"Then we'll try another way," I said.

A moment later we plunged into the shaft—shot swiftly upward. The speed of the globe was terrific. I had no means of computing it. And because of this, I had no idea how many miles of shaft we had traversed when we suddenly shot up beneath the huge metal dome that covered Coseguina.

Dolores brought the globe almost to a stop—hovering uncertainly.

"Now where?" she asked.

I recalled my two visions of this dome—the first when it was in the process of building—the second after it was completed.

"Not the ports," I said. "They'll surely catch us there. Fly close to the wall."

She instantly brought the globe to within ten feet of the arching wall.

"Open the door."

As the door flew open I hurled my flask of salt water at the wall. The flask shattered, spreading the brine over an area about ten feet in diameter.

Another globe, apparently noting our strange actions, shot upward toward us to investigate. Dolores saw it, closed the door, and flew away, circling the huge dome. A second globe rose to cut us off. Then a third and a fourth. Dolores managed, somehow, to dodge all of them. Soon the dome swarmed with flying globes, all of which looked alike. We were darting in and out among the others, and I doubt whether more than one or two of their pilots had any idea which globe we were in. Several globes collided, bouncing apart like billiard balls, but undented and apparently unharmed.

Twice we flew past the rapidly widening hole in the dome where I had hurled the salt water, but each time it was too small for us to squeeze through. Then we were herded away from it by the other globes for several minutes. By dint of much skillful manipulation on the part of Dolores, we managed to get back to it. This time there was room to spare.

"At last!" I cried, as we shot out into the sunlight which we had not seen for more than two months.

"Beautiful, isn't it?" said Dolores. "Now where shall we go?"

"Get some altitude," I replied. "Then we'll look around. We must find a place to hide, first of all."

Far out on the Pacific, I saw a rain storm coming.

"Quick!" I said. "Into that storm!"

A long trail of globes was after us, and more were continually emerging from the dome like a cloud of angry wasps. We plunged toward the storm. In less than two minutes we were in it. At least a thousand globes were on our trail by that time, but once we got into the thick clouds, they could not see us, nor we them. We veered off sharply to the right, traveling at tremendous speed. Presently our globe popped out of the clouds into the sunlight once more.

Coseguina had been left at least a hundred miles behind, and we were traveling toward the northwest, near the coast of Salvador.

Looking downward, I suddenly spied beneath the water, the slender, shadowy forms of a fleet of submarines—about twenty in number.

"If I only had my wrist-radiophone," I said.

"I managed to keep mine," said Dolores, and reaching into the coils of her dark hair, she extracted it and handed it to me. "I thought it might be useful in an emergency" she added.

"It certainly will," I responded, working the call plunger and constantly changing the wave lengths, saying each time: "Ahoy, submarine fleet."

Presently I got a reply. "Who calls the fleet?"

"Wallace Stuart," I responded, "in the flying globe above you with Señorita Monteiro. We just escaped from the Snals."

"Come closer, and show yourself at the door, Wallace Stuart," was the reply.

Dolores dropped the globe to within a hundred feet of the water. She pressed the lever that opened the door, and I leaned out gripping the hand rail. Then the submarine just beneath us began to rise. Presently its tower emerged from the water. Then up came its turrets, rails and deck. A hatch swung open, and two men came out. One wore the uniform of a U. S. naval officer. The other was in civilian clothes. To my surprise I recognized my former assistant, Pat Higgins.

"Pat!" I shouted down to him. "What the devil are you doing on the iron fish?"

"Secretary Black ordered me to bring him the Coseguina films in person," he said, "when he heard you were captured. But after I got back I enlisted in the naval air service and came down here to do some scrapping. I was lucky enough to dodge the globes until yesterday. Then one, bad cess to it, cut me down. My pontoons saved me until this ship came along and took me off. So here I am. It's sure good to see you alive and well again, chief."

While he was talking, Dolores had gently lowered our globe until it swung just a few feet above the deck. She locked the controls, and came over beside me, whereupon both men instantly doffed their hats. I dropped to the deck of the submarine and gave her a hand down. Pat introduced me to the officer, Rear Admiral Eldridge, in command of the fleet. I introduced the officer to Dolores, and we all went below. A few moments later the ship submerged, leaving the globe to drift aimlessly a few feet above the surface of the Pacific.

Our first request, as we were ushered into the admiral's cabin, was for water. We drank eagerly, but sparingly. Then I told the admiral the amazing secret of the supposedly indestructible metal.

"Salt!" he exclaimed. "Who would have thought it? And here we have had millions of tons at our disposal without thinking to try it!"

"I believe it's really the chlorine that does the trick," I replied. "The metal, I know not what to call it, must be an element unknown to our outer world chemists. In its natural state it is combined with chlorine, forming a white salt. This white salt is mined, with the chlorine removed, leaving the basic metal, which is in the form of an impalapable powder. This powder is mixed with a liquid preparation, forming a colloidal solution that acts much like cement. The liquid evaporates quickly, leaving the solid metal, the particles cohering because they have regained the water of crystalization lost in the refining process."

"But what causes the rapid action of the salt on the metal?" asked the admiral.

"The chlorine in the salt," I said, "apparently has a much stronger affinity for the strange metal than it has for sodium. As soon as the two come in contact in an aqueous solution, the chlorine is torn away from the sodium, to unite with the other metal, forming the white crystals which are the chloride of the metal, and in which state it is stable in nature. The effervescing is caused by the escaping hydrogen displaced by the sodium as it unites with the water to form sodium hydroxide. It is plain that but very small quantities of chlorine are necessary for the conversion of large areas of metal. It may be, also, that the process, once started, mysteriously rejuvenates itself in some way, like the mysterious 'disease' which attacks and often destroys old bronzes that have come in contact with saline solutions."

"We'll let the theories go for the present," he replied, "and broadcast the news. We'll tell 'em to use salt water, but also to try chlorinated water, potassium chloride, calcium chloride, hydrochloric acid—anything they happen to have handy that is a chlorine compound or solution."

"Have they captured Chicago yet?" I asked.

"They have every big city in the United States," he replied, "and many of the smaller ones. But they haven't taken the radios out of the homes, nor the salt. Excuse me while I broadcast. Boy, there's going to be some revolution!"

He went out to the radio room, and a steward brought in two large, juicy steaks, to which Dolores and I did full justice during his absence.

When he returned I submitted a plan which had occurred to me for attacking Coseguina. If it worked as I hoped it would, the communication between the upper and lower worlds would be severed forever.

All the rest of that day we were preparing for the attack—loading shells with wet salt and preparing special salt water bombs for the six small diving electroplanes which clung to the deck of each submarine. And while we made our preparations, we cruised slowly toward our objective.

CHAPTER X

The Revolt

IT was dark, and a steady rain was falling when we hove to about a mile from Coseguina Point. The huge metal dome above the crater gleamed brightly with each recurring flash of lightning. The rest of the time it showed merely as an immense, dark bulk, except at rare intervals when its lighted ports opened to admit or let out flying globes, speeding on the errands of the slimy lord of the nether world.

The upper works of twenty-four submarines silently emerged from the surface of the water. And like a frightened covey of quail there suddenly rose from the decks a hundred and forty-four diving electroplanes, their props and helicopters whirring.

There was an interval of four minutes, during which every submarine swung broadside, thus presenting simultaneously its front and rear turret guns toward the enemy.

When the four minutes were up the bombardment commenced. At first only the flashing of the guns and the bursting of the shells and bombs were visible, but

soon great holes through which the light escaped began to appear in the dome.

Out of the dome swarmed the globes by thousands. But after a few volleys, the fleet again began to submerge. By the time the globes arrived, all were safely beneath the surface. The electroplanes, also, were well concealed, flying about in the rain clouds, high above the fast-dissolving dome.

The fleet now lined up with every prow pointed toward a narrow inlet that cut into the shore line. Something shot from the prow of the flagship and, traveling just beneath the surface, streaked straight for the inlet. It had not gone more than a quarter of a mile before a second torpedo from the boat next to it shot out with the same objective. The other boats discharged their torpedoes, each in turn, keeping them about a quarter of a mile apart.

Just as the fifth torpedo was launched, the first one struck the shore. There was a terrific explosion the shock of which came back through the water, jarring our ship tremendously. But when the débris had settled, the inlet was deeper by a full eighth of a mile. The second torpedo, following the path of the other unswervingly despite the agitation of the water, blasted away another eighth of a mile of earth, leaving a great hole into which the water rushed. And following these in rapid succession came the others, swiftly cutting a huge canal an eighth of a mile in width from the Pacific straight through the lava-clad shoulder of the volcano.

The great dome, meanwhile, was swiftly melting away —crumbling to white powder which was washed down by the rain. And whirling erratically about it, like mayflies around a street light, were the mighty fighting globes of Zet—impotent, utterly helpless against this attack by enemies they could not see or reach.

It took forty-five torpedos to blast the canal all the way to the shaft. But long before this was accomplished most of the huge metal dome had melted away.

With a swift rush of swirling waters, the mighty Pacific surged into the crater—formed a whirlpool just above the mouth of the shaft.

The diving electroplanes, no longer concerned about the dome, began attacking the globes, using hollow bullets filled with salt water in their machine guns. The submarines stuck the muzzles of their anti-aircraft guns up out of the water, and at each explosion of a well-aimed shell one or more of the globes was spattered with thick brine.

Flying globes, their shells eaten away as if by immense white cankers, fell into the water around us by hundreds. A few of them dived into the water-filled shaft. Several others hurtled away, to escape in the darkness. But most of them were destroyed.

The battle over, Dolores, Pat and I flew to Managua in one of the diving electroplanes. We found that the people had received our radio message and had acted promptly. The ring of flat domes that had encircled the city was a circle of white ruins. And the immense dome that had arisen in the center of the town was a mass of brown metal wreckage covered with white powder and strewed with the arm, neck and leg tentacles of defunct Teks.

Much of this had been accomplished by wet salt, fired from shotguns, rifles and pistols and much by hurled bottles filled with brine.

WE found President Monteiro established in temporary quarters until such time as a new capitol building could be constructed. He wept as he embraced Dolores and wrung the hands of Pat and me.

Messages were coming in over the radiovisiphone. Everywhere the Teks, globes, domes and equipment were being destroyed by the simple means we had discovered, and the Snal overlords were being killed or captured. In New York fireboats had sprayed brine on the great dome that dominated Manhattan from its place on the Battery. Everywhere globes and Teks had been destroyed with brine-filled shells and hollow projectiles filled with wet salt.

In Chicago the fire department had melted away the huge dome that squatted in the center of the Loop, by using chlorinated water. The metal shackles were dropping from the world. Millions of human slaves were being set free to return to homes and families.

While we were seated in President Monteiro's office, listening to the radiovisiphone announcements, a tall, huge-headed Snal prisoner was brought in. He had been riding in a flying globe, shot down by a band of Misskito Indians. To my surprise I recognized Hax, chief scientist of the Snals, who had been on a tour of inspection.

"So," he said, eyeing me coolly as I stared at him in surprise, "you discovered the secret of the metal. You have done well for a small-brained creature."

"The tears of a woman revealed it to me," I replied. "I don't profess to understand the thing now."

"The power of Zet is destroyed," he said, "nor do I greatly care. I was opposed to this conquest from the beginning. Now I am cut off from my world forever. I am willing to trade my scientific knowledge for a chance to live and continue my experiments."

"I believe the Associated Governments of the Earth will grant you that," said President Monteiro.

"I can make you flying globes," said Hax, "that will utilize the terrific power of the Earth's magnetic lines of force. I can show you how to construct metal servants —Teks—that will respond to your thought waves as readily as your own bodies. I can make you—"

"I doubt," said the president, dryly, "whether the world will want any of these. We'll see."

"One thing I can't understand," I said, "is why the crater of Coseguina cooled so rapidly."

"I'll explain that," said Hax, blinking at me through his huge lens. "We had always suspected the existence of the outer world, but never were we able to reach it. Our borings invariably entered strata of molten rock too hot to work. We had experienced many earthquakes and volcanic eruptions, but ours were always above, rather than below us. The vents always sealed themselves eventually by the slow cooling of the lava. But after the terrific eruption of Coseguina, which had poured out millions of tons of hot lava on the surface of our world, forming an immense cone that reached almost to the vault, our investigating scientists noticed that the vent did not seal itself after the lava flow ceased, and that our atmospheric pressure had increased as if another atmosphere had been superimposed on it.

"The vent was, at first, too hot for the Snals to investigate, but we sent our proxies, the Teks, in flying globes. Having ascertained that it led to an outer world, we cooled it swiftly with a spray of liquid helium—then lined it with a metal shaft impervious to further incur-

(*Continued on page* 371)

A cigar-shaped car, almost as large as the cruiser . . . suddenly shot past below with the speed of thought.

The Raid *of the* Mercury

By A. H. Johnson

MIND-READING may some time be proved not entirely unscientific, for it is closely allied to thought transmission, or telepathy, which, according to serious students of the subject, bids fair some day relatively soon to become an established science. The chances are stacked high against any possibility that crystal gazing will at any time become a science, but there is another element in it—the element of awakening the subconscious, which, according to psychologists is ages old and has unlimited powers of penetration—which might be very interesting. Our new author has done a clever bit of work in weaving into a vivid tale this penetrative gaze into the possible future.

Illustrated by MOREY

A NECROMANCER has, or had until very recently, an office on Sixth Avenue. In the course of my business I used to pass his office several times a day. I rarely did so without a smile of amusement that so bare-faced a fraud should be allowed to continue in these supposedly civilized and enlightened times. The star-sprinkled hangings, the odd statuettes—in a word, all the paraphernalia of a charlatan and a quack—were exhibited in his "Temple of the Mysterious," as the place was called.

Then, too, the votaries of the temple were cause for amusement. Most of them were fat ladies with poodles. They came in limousines and were bedecked with jewels. I used to remark to myself that here was a wise magician who accepted only the rich as his clients. No doubt he solved such problems for them as the nature of their "astral bodies," and why Fido had lost his appetite for cream puffs.

One morning, as I was walking past, I saw a very fat poodle waddle out of the place, followed by an even fatter woman, accompanied by the necromancer himself. The woman was emphatically demanding to have the poodle's horoscope cast and the magician resented the idea as an aspersion on his dignity.

I could not forbear laughing silently at the scene, and after the dowager had been driven off by a liveried chauffeur, the magician turned his attention to me.

"You laugh, Meester Johnson," he said. "Always when you come by here you laugh. You think I am what you call a quack? No?"

He was a fine looking old man. High narrow forehead, black flashing eyes, and a swarthy skin, marked him as belonging to some eastern race. Just now his face was flushed and it was clear that he was much annoyed with me, as I supposed, for fully realizing his charlatanism. I was a little surprised at being called by name, but I knew it was frequently the practice, of such rogues as he, to obtain information about others and then use it at the most effective time.

"Why don't you cast the dog's horoscope?" I asked contemptuously. "No doubt it would be as accurate as most of your others."

His face grew still darker and then turned suddenly pale.

"So, Meester Johnson," he said, "you think I can not

look into the future or the past, that I am a quack, eh? Come inside, Sar, and you shall have a little demonstration."

I would have gone on, as I did not desire to become further involved in argument with such a person, but he said, "Meester Johnson, the explorer, the archeologist, the historian and writer, is *afraid*."

It was now my turn to flush. I turned sharply and brushing past the old man, entered his "temple." He conducted me through a kind of assembly room to a small apartment hung with strange, rich, and somber tapestries, and with a soft and thick carpet on the floor. I remember that one of the tapestries represented the "Twilight of the Gods" with the wolf Fenris raging among them. On a small table was either a real skull or a facsimile of one with a crystal ball set into the top of it.

The magician motioned me to seat myself at one side of this table, while he sat down at the other.

"Meester Johnson," he said, "is noted for his articles and stories dealing with long dead civilizations, and ancient cults, but he writes not of the future, yet he would like to do so. He spends much time speculating about the epochs to come."

I started. How had this man fathomed a fact that I had not even mentioned to my closest friends? I *did* think of the future and ardently desired to know what kind of a civilization would follow our own. My study of ancient cults had trained me to think of life as a continuous chain in which the life of each individual is only a tiny link. I had frequently attempted to portray life in pre-historic times and it was my dearest wish to be able to write an authentic story of the future. Not perhaps a great story—I had no wish for the dusty laurels of a realist. I wanted to write a story that would truly represent life as it will be lived in some far distant era.

Barely taking time to enjoy my discomfiture, the old man threw a little bluish powder into a charcoal brazier, which immediately flared up. He placed it so that it was in a line with the crystal ball from where I sat and formed a kind of background for the ball.

"Look into the ball," he said.

I looked; at first only momentarily glancing, then I gazed more deeply, and finally I looked with as great an intensity as though my life depended on it.

THE air liner *Light of the Western Skies* was taking off from the docks in Great Manhattan. It was shortly after sunset and people in the streets of the city gazed curiously as it rose toward the last rays of the sunlight. As the ship bathed itself in the dying light, the band on the deck struck up a gay air. The *Light of the Western Skies* was one of the largest airships in the world. Her decks were crowded with people. On the open deck, protected only by wind-screens, were the control cabins, the gun emplacements, the promenade, deck-chairs and dance platforms for first class passengers, and seats for the musicians.

It was a gay and careless crowd for the most part. Officers and nobles in gorgeous uniforms, and carrying jeweled orders, mingled with beautiful women dressed in robes of textures and colors that would have made Cleopatra despair. Servants in the dark red uniforms of the Consolidated Airships Company went to and fro bearing refreshments and executing orders. Haughty officers in the proud blue of the Myrmidons stalked back and forth, clanking their swords and ogling any pretty woman they happened to see. The Myrmidons themselves were at first grouped around their posts, some near the guns, others in specially prepared positions, but, as they saw their officers paying little attention to them, they slipped down to the second and third class decks to dance or talk with friends among passengers or crew.

In the depths of the ship, in hot and steamy compartments, the slaves watched over the mighty engines. They were careful, very careful, not to let the smallest accident occur to the machinery, for if the most trivial injury occurred, they would be severely punished. Their only vision in life was to work and work until they died, hoping only that they might escape as much punishment as possible.

To an outside observer the ship might have presented an analogy of Heaven. Earth and Hell—the top deck was Heaven, where everyone possessed all that he could desire, the middle deck, earth, where the employees of the Airships Company and the lower class passengers had quarters; and the interior, hell, where the slaves labored like black and grimy demons.

The ship followed fast in the track of the departing sun but not even in the thousands of years that had passed since man first learned to fly had airships reached a speed sufficient to equal that of dawn or sunset. So in an hour or two darkness overtook the ship. Brilliant lights were switched on and the gaiety on the upper deck continued unabated.

An hour or two after dark the lights were suddenly extinguished and at the same time the speed of the ship was greatly increased. A murmur of surprise and consternation swept through the passengers. What could be the cause of such unusual procedure? Soon the word was passed around that a suspicious-looking ship, which refused to answer any radio signals, had been sighted by the lookout. The radio operators had immediately attempted to send word to the patrolling cruisers of the Airships Company, but the strange craft had set up a field of artificially produced electrical waves that prevented any intelligible messages from either being sent or coming through. The passengers were advised to go below to their cabins and the Myrmidons were ordered to their combat posts.

The strange ship, at first barely visible in the light of a rising moon, approached rapidly. There was the report of a gun from its forward deck and a phosphorous shell burst across the bows of the liner. This was the international signal to heave to. The liner answered by a broadside of all its available guns. Several of the shells were seen to burst on the strange craft, which could now be made out as a swift cruiser.

It soon became clear in the struggle that followed that the cruiser was to have much the best of it. It moved almost two feet to the liner's one. It maneuvered more quickly and easily, and most important of all, it was evidently commanded by an expert in aerial warfare.

The liner dropped, rose, circled and dipped—all to no avail. The cruiser quickly obtained a commanding position above it, and swooped low over it, raking its decks with gunfire. It was evident that they disdained to drop bombs.

A few of the passengers on the upper deck had neglected to obey the advice to seek the safety of their cabins and now stood watching the conflict from the partial shelter of companionway entrances and cabin

doors. One of these was a young man dressed in a white robe with a purple border, which proclaimed him to be of the highest rank. He had taken no part in the dancing and flirting which had occupied most of the passengers. At the time the lights were extinguished he had been dictating to an enormous slave amenuensis. As soon as he heard the explanation for putting the ship in preparedness for battle, he had taken shelter in a cabin doorway and remained an interested but imperturbable spectator. Occasionally he made some observation on the trend of events, seeming to speak rather to himself than to the slave. Now, as it became apparent that the keel guns of the cruiser were making it impossible for the defenders to remain at their guns, he muttered to himself, "The captain is a fool. If he keeps this up he will soon have no men left at all. His only chance is to order his men into shelter in hopes that the pirates will be foolish enough to board."

Seeing the captain in the shelter of a hatch some distance away, he coolly walked across the deck, disregarding the fact that he was exposed to a very dangerous fire, and communicated this observation to him. The captain received his advice with great respect and acted on it at once. The Myrmidons were ordered to leave the guns and conceal themselves as best they might about the deck.

The sudden cessation of fire evidently puzzled the attacking ship. It circled low over the liner in an attempt to find the cause for the sudden abandonment of the defense, and, apparently satisfied that the defenders were practically routed, it finally came alongside and began to land a boarding party. The young man, who, by the tacit assent of the captain, seemed to have taken command of the defense of the liner, coolly waited until a fair half of the boarding party had reached the deck and then ordered the vertical propellers reversed, which course violently wrenched the two ships apart, dropping the liner a thousand feet or more. This course was cleverly calculated to maroon the attackers so that they might be overwhelmed before assistance could reach them. But the attackers showed their mettle. Instead of waiting to be rushed by the Myrmidons, who were now coming out of their hiding places, the others took the initiative. Lead by a fair-haired, blue-eyed, young man they rushed forward to the attack. Armed with the long slightly curved swords, suitable for either cutting or thrusting, which the experience of thousands of years had shown to be man's most formidable weapon for hand-to-hand fighting, they surged forward in a shouting, whooping, cheering mass. The impetuosity of their charge swept all before it for a time. The Myrmidons were caught separated in small groups and were cut separately. The sword play of the leader of the invaders was a fearful and beautiful thing to see. Dressed in the short belted tunic which is the uniform of all atmen, and which admirably set off his perfection of bodily strength, he moved among the defenders like a raging god. Broad shouldered, deep chested, slender of waist and hips, muscular of arm and leg, quick and graceful as a leaping panther, his blade was repeatedly dyed with the blood of the defenders. Using edge and point with equal skill, he alternately beat down the guard of some stalwart Myrmidon by brute force and then, pausing only long enough to wrench his blade free, he would use superior skill and speed to thrust the point deep into the body of another. His blue eyes flashed with cold fire and his lips were slightly curved in a mocking smile.

That he was not unknown to the defenders was shown by an observation the leader of the defense made to the captain.

"It is Prince James and his 'revolutionaries,'" he calmly remarked. "I thought as much after I saw the skill with which the cruiser was handled. By Midas, he is a noble fighting man!"

Another passenger also was watching the leader of the invaders. She was a tall slender girl, who was sheltered deep in the entrance of a cabin door. Evidently of the highest rank, she was accompanied by two or three slave girls who incessantly begged her to take refuge in the depths of the ship. She refused.

"I *must* see this," she said. "It is James and the cruiser is the *Mercury*, I am sure. Is he not handsome, Esmeralda? And he plays his part like a true man. Had he but written me what he intended, I would have come to his side, though he had been pronounced traitor and pirate by all the nations on earth!"

Meanwhile the fight had commenced to go against the young atman and his followers. The leader of the defense had coolly allowed several groups of the defenders to be routed in order to give him time to organize the rest. Now this had been done and two cohorts were attacking the invaders directly from the front, while sharpshooters and rapid-fire gunners poured in a destructive hail of shot from the flanks.

The leader of the defenders, himself apparently unarmed and taking no personal part in the struggle, watched the consummation of his wise plans with considerable pleasure. The invaders seemed to be on the verge of being wiped out. But he had counted without the interference from the cruiser. This ship now reentered the battle. It took up a position directly above the liner and sprayed its decks with its keel rapid-fire guns. The gunners on the lower ship were unable to damage the cruiser from the bottom, as it was here that its protective armor was thickest, and were soon forced to desert their posts. The captain dropped, dipped, and whirled his ship as rapidly as possible, in a mad attempt to dislodge the cruiser from its commanding position, but in vain. The cruiser could maneuver much more easily and it stuck to its position like a mongoose to the neck of a cobra.

The defenders went down like grain before the reaper. The passenger, who had assumed command, saw the hopelessness of the situation and himself ran up the white flag to the masthead and ordered the few remaining defenders to throw down their arms.

The young atman of the invaders took command of the ship and slowly dropped it to the ground. A few minutes later the cruiser landed beside it. The field where they landed was part of a boundless plain in the middle west. Like almost all of the country, since men had learned to make their food in factories, it was absolutely void of all human occupation.

The lights were switched on. The crew of the *Mercury* (which name could now be made out on the hull of the cruiser) methodically searched the liner, removing whatever they wanted in the way of food, ammunition, clothes or other stores. On deck the atman who had now been joined by a short thickset man, dressed in the uniform of a chief gunner, who was evidently his second in command, ordered the passengers and crew of the *Light of the Western Skies* lined up for inspection.

As he walked slowly down the line, he saw the leader of the defenders and stopped with a cry of surprise.

"Well," he said in a cold voice, "this is a piece of luck. Lothaire, Prince of the Second Cycle, Vice-Pontiff of the Plutocracy. Who would have suspected that you would fall into my hands? We have a few scores to settle, Prince. Do you remember when you led the armies of the Plutocracy against my estates in the South? My father and sister were killed in the sack of the 'Town of the Oaks' and it was you who commanded the troops. I am very glad to see you again, Prince."

Then turning to his second in command he continued, "Say you not so, Aurelius? You were present at the sack of the 'Town of the Oaks.'"

"Aye, Prince," was the reply. "He is the ablest devil in the council of Midas, or in the whole administration of the Plutocracy."

The person, addressed as Lothaire, replied calmly and haughtily. "What I did then I did as the servant of the Plutocracy and I am not ashamed of it. You brought your fate upon yourself. You might have stood high in the councils of the Plutocracy. None had a better chance. You had youth, ability, great wealth, and a great name. But you preferred to espouse the cause of 'the people' as you call it, and see what it has bought you"—the speaker gestured toward a placard that was fastened to an adjacent wind-screen—"there is a price on your head. That poster offers a reward for your capture. The Grand Council of the Plutocracy has forfeited your estates. The name of James Lancaster, Prince of the Second Cycle, is now coupled with the terms traitor and pirate. Even at the present moment the ships of the Plutocracy are probably closing in on you to mete out the fate you deserve."

Prince James flushed violently, and started with rage, at the word traitor, but he controlled himself, scorning to strike a prisoner, and said with a slight smile, "Thanks for reminding me of that fact, Prince." Then to his second in command, "Aurelius, send out ten scouts in the gliders. Let them cover every direction and report the approach of any ship." Turning back to the prisoner, he continued, "You shall answer for your words as well as your deeds, Lothaire. It ill becomes you, who are known as the most coldly cruel general of the Plutocracy, to cast epithets at others. You know that you have been tried and condemned by the Black Groups. What if I turned you over to them for execution? But more of this later."

Continuing his inspection of the prisoners, he came to where stood the girl who had spoken of him to her maid. On seeing her, his face lit up with pleasure and he rushed forward saying. "Avice, you in America! Why didn't you answer my letters? I thought you must have thrown me over as most of my friends did when I espoused the cause of the people."

Then as the girl did not move, he said anxiously. "You haven't, have you?"

"You wrote, James?" the girl asked. "I never received your letters. They must have been intercepted by the secret agents of the Plutocracy. I know that I have been watched. I thought that you had deserted me. And so I came to America to see. But, James, you need never be afraid of being thrown over by me. It was I who induced your father to suggest our engagement. I have loved you since we used to play together as little children at the Villa Cumberland."

"Thank God," he said and caught her in his arms as though he would never let her go.

Prince Lothaire watched this scene with the keenest interest, and, as it attracted the attention of the guards from him, he moved to take advantage of it. The one-man gliders that James had ordered sent out were now poised on the deck of the liner ready to take off. Lothaire took a step or two forward and clapped one of the men, who was just about to take off in a glider, on the shoulder in a friendly way, saying, "Hello, Anderson."

The man, thinking he was mistaken for another, turned unguardedly. Lothaire seized a dagger from his belt, and with the smooth speed of a striking snake, plunged it up to the hilt into the man's body. Then, before the already lifeless body could fall, he had moved behind the man and on to the glider. Starting the small but efficient motor, with which it was equipped, he slipped over the side of the liner and plunged toward the ground to gather speed quickly. He straightened out so close to the ground as to brush the grass, then keeping the liner between himself and the guns of the cruiser, he was off like an arrow.

The consummate coolness and cunning of his escape left his captors so astounded that no effective action was taken until too late. A few hasty and ill-directed shots were fired and the other gliders left in quick pursuit, but the darkness of the night and the almost absolute silence with which the glider moved prevented any real hope of success.

James was plainly worried by this successful escape of the prisoner. He turned to his second in command: "How soon can we leave, Aurelius? Lothaire will have the cruisers of the Plutocracy about our ears in an hour at the latest."

"It will take at least half an hour to transfer the stores we need, Prince. "Then, too, one of their shells has damaged the port horizontal propeller and that will cut down our speed considerably."

"It was certainly an unfortunate escape," said James, "for we are sure to have to encounter Lothaire again later. But"—here he smiled at Avice—"no day on which I find you again could be anything but supremely happy, no matter what else occurred."

The girl smiled happily. "Tell me about yourself, James," she said. "It is two years since I saw you, you know, and then I had no idea that you were to become a famous revolutionary. You were interested in sports and aviation then, instead of political affairs. What caused this change? Was it your father? I remember he wrote several books dealing with the injustice of slavery and the rights of the people."

"Yes, it was my father," he said. "You see, he didn't stop at writing. He made speeches and had them broadcast to the four corners of the world. The Plutocracy didn't like his books, but, he was an independent prince so they let him alone, but when he began to have his speeches broadcast to the slaves and people, they sent to arrest him. As an independent prince, he refused to be arrested. Then they sent an army and surrounded him in the 'Town of the Oaks.' I was on a hunting trip in the west and didn't hear about it until after it was too late. Aurelius was there and he tells me they put up a gallant defense. Except for Lothaire's skill and cunning, they would have escaped. Dad, who had never had a sword in his hand before in his life, died in the breach in the town wall. When it became evident that

the town was to be sacked, Mary, my sister, took poison. Aurelius was wounded and left for dead. He was saved by some former slaves that father had freed. They tried to get me, too, when I came back from my hunting trip, but some member of the Black Groups warned me and I got away on the yacht. It was then I swore vengeance on the Plutocracy and Lothaire. I turned the yacht into a cruiser, manned it with the slaves Dad had freed and who remained faithful, and preyed on the commerce of the Plutocracy ever since. I do not intend to rest until father's ideas are carried out; the slaves are freed, and there is justice in the courts for all.

"As soon as I decided on this course I realized that my position was very different from the one I held, when we were engaged, so I wrote you, asking if you preferred to break off the engagement or live the life of a pirate's wife. When I did not hear from you, I was very much afraid that I would have to go on alone."

"I would be with you anywhere, James," she said. "But with the combined power of our principalities we should be able to gain your point, even against the Plutocracy. Since my father's death, I am Princess of Orleans, Duchess of the Cumberlands, and Countess of the Delta. Together, we control almost a fifth of the country."

James shook his head.

"Some of my estates are far separated you know," he said. "And though I believe the artisans and people generally would support me if they dared, I do not think they will have the courage to do so. The Kingdom of the South, which was our main support, has been badly ravaged. It is more likely that you will only lose your estates in addition. Still, I feel sure we will win finally. The Black Groups have given me some aid already, and they will continue to co-operate with us. I do not approve of their policy af assassination; still I have had to admit that it is the only thing that has held the Plutocracy in check at all."

Here Aurelius reported the transfer of stores complete. James ordered the slaves on the liner turned loose and allowed some of them, who had had experience either as soldiers or machinery workers, to join his crew. The passengers and the Myrmidons were left unmolested. The invaders withdrew to the *Mercury*, accompanied by the Princess Avice and two of her slaves. It was soon found that they had taken their departure none too soon, for the scouts sent out in the gliders came back at top speed and reported a fleet of large ships approaching from the east and north. James went to the control cabin and laid a course almost due south along the ancient river valley of the Mississippi. He ordered full speed for both vertical and horizontal propellers. The *Mercury* was a wonderfully swift yacht, built for speed. but with the damage to the propeller, he doubted if he could distance the ships behind him. He knew that they would be spread out fan-wise with delicate listening apparatus tuned to discover the sound of his motors, so he hoped to outwit them by rising, which would lessen the distance that his motors could be heard, since sound is carried by air waves, and in the rarefied air of great heights audibility is much decreased.

The vertical propellers, hidden deep within their air shafts, which were so arranged as to force out a dense column of air from the bottom of the ship, thus helping it to rise in somewhat the same manner that a squid propels itself through the water, hummed with a steadily rising note as they gained speed. The *Mercury* rose swiftly and soon all hands were ordered below decks to protect them from the cold and rarefied air of the great height. In the control cabin of polished ebony and mahogany, James and Avice sat on a bench waiting anxiously for a report from the master electrician. His report will determine whether or not the fleet had picked up their trail.

"Do you remember where our estates adjoin in the Cumberland Mountains?' asked James.

"Of course," answered Avice. "I got many a lecture from my governess for sneaking off from the Villa Cumberland to play with you."

"Well, that is where we are going," said James. "We have a secret stronghold near there. We should reach it in a few hours."

Aurelius entered.

"The master electrician reports that a large fleet is undoubtedly following us and gaining on us fast," he said.

"Drop the ship within five hundred feet of the earth at once," ordered James. "Our plan has failed. We must depend on speed now and the propellers can't get a good grip on the air at this altitude."

After the ship had reached the thicker air of the lower altitudes, the pursuing fleet gained much more slowly. But they still gained, and the number of pursuers steadily increased as ships, signaled in advance, joined the pursuit. By keeping up a strong and continuous field of static the electrician on the *Mercury* interfered with these signals as much as possible and prevented any intelligible messages from being sent to ships in the direction in which the *Mercury* was moving. In that way the ships were not headed off, but new ones steadily joined the pursuers from flank and rear.

The chase lasted for some hours. The pursuers were much closer and the dawn was lightening the sky in the East. James had gradually turned east of south and was now over the western foothill of the southern Appalachians. In order to lose no time in vertical movements, he was following the carefully engineered track of an Org Line. This wonderful invention, embodying a series of electro-magnets arranged in a half circle so that a paramagnetic body would be held at the center and (by being equally attracted from below and both sides) would be supported in the air a few feet from the ground, appearing to stay there by magic, now carried the freight traffic of the country at great speeds. The electric circuits were so arranged that certain magnets in front of any car traveling on the line pulled it forward, and then, when it passed, the pole was automatically changed and it was repelled. In this way cargoes of great bulk were speedily transferred in metal cars, without any crew or pilot.

As the sky slowly grew brighter, it became possible to make out the pursuing fleet. It seemed to be composed of large ships. To James' experienced eye they appeared to be battle-cruisers. A shell that burst some distance away made him aware that they also could be seen by the pursuers. A large mountain loomed ahead into which the Org Line bored in a tunnel. The situation was desperate, for the delay necessary to rise over the mountain would be fatal. The crew were aware of their predicament and either stood around the windshields, watching the pursuing fleet with hopless hate in their eyes, or busied themselves in preparing the guns of the cruiser for a last desperate battle. Most of them would be

treated as runaway slaves if they were captured and they preferred to die at their posts. Aurelius, brave and stanch of heart as his peerless Roman namesake, fingered his long heavy sword and suggested that since they must fight, they should turn back and board the flagship in which he did not doubt Lothaire to be, saying that he could die happy if he first saw his blade bury itself in Lothaire's body. Avice de Loyola, brave as any of her illustrious ancesters, who had been noted for their courage for hundreds of years, stood quietly—very pale but composed.

"Since we must die, my prince," she said, "let us show them that we know how to die bravely. I am glad that we are together."

James looked at her in desperation.

"No!" he said. "It shall not be. You are too young and beautiful to die. There must be some way out. If only that mountain were not there. If we lose time to rise over it they will get us with a shell; but if we had a little start, we might be able to escape, for their cursed listening devices will not work among the echoes and air currents of these hills."

Then he saw the gaping mouth of the Org Tunnel and a desperate plan flashed into his mind.

"All is not lost," he announced coolly. "There is still one chance; a desperate one, but still, a chance."

He stepped to the open bridge and took the controls. Straight toward the mouth of the tunnel he headed. The tunnel was terribly small for his plan. Should they strike an Org Car coming in the other direction, at the speed at which they were moving they would be reduced to dust, but it seemed their only alternative. Another danger was that of being forced against the roof or wall of the tunnel. As the darkness closed over them, he heard Avice gasp. Aurelius' ruddy face turned almost white, but he stood quietly with a grim smile on his face. This was the kind of thing he admired, and for which he followed his young leader with boundless devotion. Courage and audacity, where could there be a better leader?

The tunnel was fifteen miles long but it hardly seemed that they were in it a minute. To James it was just a long stretch of smooth walls illuminated by the searchlight and blurred by the speed with which he passed. Then they shot out into the open air again and just as they rose from the Org Line, a cigar shaped car, almost as large as the cruiser, suddenly loomed out of the dim morning light ahead and shot past below with the speed of thought. James raised his hand to his forehead and found it damp with perspiration at the narrowness of their escape. If they had met the Org Car in the tunnel, they would never have known what struck them.

James steered the ship down a sheltering valley at right angles to their former course. Then he changed the course several times dropping deep into mountain valleys and hurtling through passes at top speed. When, after a half hour of this, the master electrician reported no sound of the pursuing fleet, he knew that they were safe. He headed straight for their stronghold. A few minutes later he brought the ship low over the rushing waters of a swift mountain stream. After following its course for a short distance, the dark entrance of a mighty cavern showed to their left. By skillful maneuvering he brought the *Mercury* to rest in this natural hangar, completely concealed from the keen eyes of the hundreds of aerial scouts that he knew would soon be on the lookout for them. Under the eye of the searchlight, the cavern disclosed itself as containing galleries and passages that might conceal an army. A small body of his men that had been left behind, either to guard the stronghold or because they were unfit for the strenuous work of the expedition, rushed forward to unload the ship and congratulate them on the successful outcome of their expedition. When it was learned that James had brought back his future wife, and that she was Avice, who was noted for her generosity, kindliness and wealth, an impromptu celebration was staged.

A few hours later they were married. The impressive and dignified ceremony was performed before a natural altar in the rock. The scene was lit by the ruddy glare of a great fire. James stood tall and proud and very happy, with his officers and friends grouped behind him.

Avice, with hair as black as night, and skin of the tint of pale ivory, stood at his side with her maids behind her. Her gorgeous robes and jewels (taken from the small amount of baggage she had had time to bring with her) made her look, even more than ever, the beautiful woman and great princess that she was. The gossamer fabrics, in the fashion of the day, only partially concealed the beautifully rounded perfection of her form. The firelight glinted from her hair, illuminated the soft and warm flesh of her throat and shoulders, and sparkled in her eyes in a way that put to shame her splendid jewels.

The ceremony was performed by Aurelius, who had been made a tribune by Prince Edward, James' father. As the concluding words were said, Avice and James blended their lips in one long kiss, a thousand swords flashed from their scabbards and a mighty shout rent the air. "Long life and happiness to our King and Queen, Success to our cause!"

* * *

I RETURNED to full consciousness very slowly. It was with a start that I realized that the sun was shining on the stained glass windows in the west of the room and that it must be late afternoon. I must have been in some kind of trance, looking into the crystal ball, for hours. I turned my attention to the crystal again. It was as clear and limpid as a mountain stream. No vestige of the wild scenes that I had gazed at within its depths remained. Nor did the most prolonged scrutiny restore them. The ball remained *mockingly* clear. I rose from the beautifully carved chair with my feet sinking into the soft carpet and looked around for the old magician. There was no one in the room save myself. Still partially dazed, I walked from the room and out into the street. As I passed out it seemed to me that I heard someone laughing softly to himself.

I went to my rooms and turned what little skill I had into writing the story of what I had seen in the crystal ball. This story I now give to you for what it is worth. I do not assert its veracity. I do not attempt to explain it. It may be merely the wild dreams of a man under the influence of whatever drug the old magician used in the charcoal brazier. It may be some slight glimpse of the lives that people on this planet will live in the far distant future. Let each man decide for himself.

THE END.

The Metal Monster

By Otis Adelbert Kline

(*Continued from page* 363)

sions of hot lava. What happened later was inevitable.

"As soon as we discovered that there were living, intelligent creatures in the outer world, Zet, ambitious conqueror of our world, laid his plans to conquer yours. I objected, but I was overruled.

"You know the rest, and I am hungry, thirsty and weary."

The president signed to the guards, who took him away.

* * *

Two years have passed since those events took place, yet I can see them as clearly as if they had occurred but yesterday. For three months after the canal was blasted through the wall of Coseguina, the Pacific continued to flow into the shaft. Then the whirlpool disappeared, and a level crater lake was formed. Hax told us that it was impossible for the nether world to have been completely filled with water in that time—that its inhabitants must have found some way to stem the flow.

He may be right. I do not know, nor do I care much, so long as its slimy intelligences are kept where they belong—in the dank, musty regions where they were evolved. For then I will feel more assurance about the future of a certain little curly-headed, brown-eyed fellow Dolores has just brought to my study, pajama-clad, to say "good night" to his daddy.

The years pass quickly, and it will not be long before Wallace, Jr., must shift for himself in the world that was saved by his mother's tears.

Note—Mycetozoan is formed from two Greek words, the first meaning "fungus" and the other meaning "animal." This won an old name for the fungus, myxomycetes, which was considered by some authorities to be an animal. The name myomycetes means slime fungus; the idea of the animal relationship is generally thrown out, although some still consider the fungus as belonging to the lowest order of animals. The dispute indicated is an old one. The English language name is slime moulds. They increase by division and finally aggregate or fuse into masses of protoplasm, called plasmodia. These masses are often found on decaying logs.

THE END

The Night Express

Man's scanty merits from his faults I sift
Disheartened at the residue. When—hark!
There goes the night express, nicknamed "The Lark"!
I feel my heart grow big—grow light—and lift!
Our sinner still has wonders in his gift.
Listen that racing engine's joyous bark—
A steel-thewed greyhound speeding through the dark,
Staunch, steady, proud, magnificently swift!

The erring human gentles to his need
Wind, water, lightning; will he miss the goal
Of mental strife? Or being of the breed
Of conquerors will he lose his grip of soul?
Master of metals, motors, wheels, and wings,
Will Man descend to be the thrall of Things?

—Julia Boynton Green.

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The Stolen Chrysalis

A GOOD many of our readers will remember the enterprising scientists of "The Moon Strollers" fame, which story we published in the May, 1930, issue of AMAZING STORIES, *and will be glad to welcome them back at this time. These adventurers brought all kinds of geological specimens from the moon, all of which, we believed, they had turned over to the Museum. But our scientist-heroes confess here to having withheld at least one thing—a chrysalis. But they had good reason for doing this, as you will agree after you have read this story.*

FREDERICK SCOEFIELD sat at his office desk perusing the morning's mail. After an absence of nearly four months, he was energetically pulling together the loose ends of his rapidly growing engineering business. Despite his amazing adventure and sudden wealth, he did not intend to lead a life of idleness. Things certainly needed personal attention, for no matter how competent subordinates were, they always lacked his initiative, his daring imagination. As he sorted the letters into two piles—business and personal—his hand picked up the familiar sky-blue envelope of the Astronomical Club. He smiled as he turned over the letter and glanced at the constellation of white stars printed on the back to indicate the current month. His smile gave utterance to an exclamation of interest, as he read the following notice:

"Regular August meeting of the Astronomical Club at the Shack, the third week-end, as usual. The program will include the initiation of Professor Kenworthy into membership, and Dr. Mueller promises some fun, cracking open a number of geodes and red shale fossils from his private collection.

Respectfully yours,
R. C. Burroughs,
Secretary."

Scoefield leaned over to his desk calendar and marked a cross on Friday, August 22, 1935, and then he dropped the envelope and notice into the basket. He was the last person to leave the office at five-fifteen. He fought his way into a subway train and shot out to his suburban apartment.

At five-thirty, a janitor entered the offices of *Scoefield and Company, General Engineering,* and proceeded to clean out the waste baskets and sweep the floors. Anyone peering through the office door mail-slot might have seen him on his knees, sorting through the eight wire baskets, letter by letter, until he found the blue envelope and the notice beneath it. He now acted in an unusual manner for janitors, for he carefully placed these treasures in a larger stamped envelope which he carried in an inside pocket of his vest. Leaving the office door open, he quickly walked down the hall and taking the envelope he had just filled, deposited it in the mail-chute.

The next morning this letter found its way to the desk of a free-lance writer for a popular scientific monthly. Each month he dug up a scare-head leading article of advanced news. He was known at the office as "Mr. Hawk," and the magazine closed its eyes to his news-gathering methods, because his stuff was popular and helped put the publication over with half a million copies per month. An odd type of person, with a neurotic taste for the quasi-scientific. He had studied just enough science to kill his morals and religion. With an insatiable curiosity, he was always delving for the unpublished facts.

This person also marked the date on his calendar and then burned the letter.

As Scoefield rode out to his home he mused over the events of the past four months. It seemed incredible that he had become a second Lindbergh; been fêted and honored by the leading scientific societies in the world. The sheer nerve and daring of that rocket trip to the Moon! Jules Verne's prophecy actually carried out successfully! His back-breaking labor day by day with

By

J. Rogers Ullrich

Author of "The Moon Strollers"

Illustrated by PAUL

The head, with huge single lensed eyes, turned on an axis from side to side, as it looked around the table with a doleful and apprehensive stare. . . . Its wings now fluttered spasmodically, as wave on wave of nerve deadening perfume stupefied the senses.

Professor Kenworthy and Dr. Mueller in exploration over the Moon's dead surface; the beautiful minerals and fossils he had gathered for Mueller; the agonizing suspense of the return trip; the crash and injuries in the Andes Mountains; then—ovations, endless handshaking and photography; his present disguise to avoid being pestered and now—the quiet routine of the engineering business all over again.

Several weeks later two men waited at the Grand Central Station for a noon train to carry them up into Vermont. One hoped to get a few days' rest and relaxation with old friends away from the city's roar and heat; the other to spy and steal, if need be.

THE sun had just dipped behind the rolling hills and a faint mist was settling into the valley, when Scoefield's train arrived in the little town of Oakdale. Quite a few people alighted; vacationists, farmers, several salesmen, some women and children, and lastly, a man with a full beard, who seemed very particular about the careful unloading of his motorcycle from the baggage car. Scoefield threaded his way through the group of passengers on the platform and got into the waiting buggy of Lem Thompson. Lem was an old-time farmer, rich in land, but stringent for ready money. He leased one of his hilltops to the Astronomical Club and depended upon them for a considerable part of his income. The two men chatted intermittently, as they jolted over the eight-mile drive to the Shack.

"I reckon you fellows are goin' to have some kind of a reunion up there. I've hauled darn near the whole Club in the past two days."

"Yes, everybody likes to get away from the city during August."

"I had to make an extra trip for Dr. Mueller. He brought up two packin' cases. I had to get some of the boys down at the station to help load 'em on. I reckon I would have hitched up a double team, had I knowed how heavy they was."

"Yes, Mr. Thompson; some supplies, no doubt; the Doctor is making a larger telescope this summer."

Darkness had settled over the hilltop as Lem Thompson drew up his team where a path cut back from the dirt road. Scoefield got out, took his bag from the rear, and bid goodbye to the old farmer. As he strode up the path to the Shack, he was conscious of a chill in the night air, denoting that the short summer was drawing to its close. His ear, always in tune to the sounds of nature, caught an odd droning sound coming up from the valley. "A flivver" he thought, trying to navigate that dirt road—"must be taking the rough spots in low." He reached the Shack a moment later, with its twinkling lights and thin column of blue-gray smoke ascending from the chimney. As he entered, a roaring fire, the cheery circle of old friends, and the aroma of roast pork with New England baked beans, greeted him. "Well, well, here comes the returning hero! Come on, boys, all together—'For he's a jolly good fellow, for he's a jolly good fellow'." Every man was on his feet, shaking hands with Fred. Dinner was just being served. Scoefield took his customary place and at once joined in the noisy conversation.

"No cooking this trip, Fred," shouted Dr. Mueller, from the table's end. "Donnelly sent up his colored man and we are having a combination of both New England and Southern cooking."

"Suits me:" replied Scoefield, "I am ready to eat anything after that long ride up from the city."

Then spying Kenworthy at the other end, he bantered, "Hello, Kenny; I thought being a professional astronomer, you would be too holy to join this club of amateurs?"

"No, Fred; I consider the invitation to spend the week-end here a signal honor. There hasn't been a dull moment."

"Just wait, Professor, until Mueller starts talking about his minerals; then you can cover up for the night," blurted out Burroughs. Everybody roared and the Doctor promptly retorted, "I shall get even for that remark by giving my discussion in scientific German." Whereupon the men around the table roared even louder, and holding up their coffee cups to Mueller, sang again, "For he's a jolly good fellow, for he's a jolly good fellow."

Shortly, the big pine table was cleared, Havanas were lighted, and the men relaxed, while Mueller rummaged through his cases and laid the geological specimens, one by one, on the table. After cleaning and adjusting his glasses, he began:

"You gentlemen know that in the exclusive story of our exploration to the Moon, which Fred sold to the Associated Press, there were mentioned 603 geological specimens, besides those basalt disks, which we brought back. I saw fit to give the Smithsonian Institute 492 specimens, which I identified and labeled during our fall back to earth; presumably the remainder not mentioned were either duplicates or worthless; at any rate, no questions were asked about them, and as far as I know, the public thinks they have the entire collection."

"For my part, after risking life and limb, I felt entitled to retain such material as I have here until this club could examine and study it at leisure. In fact, this shack is the only place in the world where I can do any uninterrupted work. I expect to remain here for another month at least.

"Now then, bring the lamps closer, and pass around these minerals from hand to hand. The science of fossils is, as you know, called 'palæontology.' It is a very broad subject, with new discoveries constantly extending the field. It has now several distinct divisions, among which may be mentioned 'palæobotany,' concerning itself with the ancient forms of vegetable life. As an example, please examine these fern fronds; beautiful specimens, and dating from the Moon's carboniferous period; probably millions of years before corresponding terrestrial conditions. They are identical with *cladophlebis denticulata,* found in English inferior oolite; adding as it does, another of the now overwhelming proofs of the universality of the evolutionary processes.

"On the other hand, I have here samples of red shale, which may be only ten thousand years old, or dating from the last great cataclysm, which rendered the Moon uninhabitable for flora or fauna, as we understand it.

"We have striking evidence that in the Moon's death agony, a series of frightful earthquakes occurred, opening up gigantic fissures in the surface into which the once abundant seas disappeared. In these cosmic disturbances, whole verdant areas must have been suddenly inundated, followed by violent sand storms, and then by burning sun-heat. In this way, these red shale fossils have been formed. They are a very prolific source of information. However, those of you who are more in-

terested in mineralogy than botany, get a couple of small hammers out of the laboratory and crack open these geodes. If someone will get me a chisel, I would like to split down this block first."

DURING the interval of getting tools, heads were bent together, specimens were passed around, and everybody talked at once.

"Fred, come help me hold this piece on edge, while I try to split through this dark vein." A light blow, and the stone crumbled under hand, it was so soft and porous. They all leaned forward to see the contents. There it was; a spray of leaves on a twig, just as fresh and green as if plucked yesterday, and partly hidden between the leaves, a brown, egg-shaped object, ridged and mottled. Holding up the strange thing, Mueller asked, "What is it?" "Pass it over here," answered Skidmore, who was a natural history fan.

"Gentlemen:" he said "this is a fossil chrysalis of a huge butterfly, with probably a wing span of fourteen or sixteen inches. Very rare and very interesting, indeed."

"What makes you think it is a fossil?" spoke up Scoefield. "It may be living!"

"Well, that is easy to try," said Mueller. "Someone bring me a bowl of warm water." The thing was thrust into the water and all eyes were focused. The seconds lengthened into minutes. "Give it time to warm up," said Mueller; but hardly had he uttered these words, when the thing began to squirm and jump like a Mexican jumping bean. The astonishment of the men can be imagined. Everybody talked at once, and Skidmore now took the stage. "Tell me, Doctor, how do you account for such a miraculous preservation, after these thousands of years?" he questioned. "I cannot account for it. It is simply one of those strange freaks of nature which the scientist encounters occasionally, to baffle and upset our fine theories and speculations. All that could be said is that a rare combination of insulation, together with oxygen-bearing ores, sealed and kept vitalized the twig and chrysalis."

"Do you suppose the chrysalis will hatch?" everyone asked.

"Why not?" he answered. "And if it does, it will represent the Moon's last living creature. We will put it in a little wire cage under the laboratory skylight, and let the heat of the sun do the rest."

This fossil proved to be the *"pièce de resistance"* of the evening; the remainder held but casual interest for the men. In a very short time the discussion became general, and when the chrysalis had been properly disposed of, it ceased to be a subject of speculation. The night was particularly fine; several of the men wanted to search for a new comet, recently reported from the Harvard Observatory, so it was well after two o'clock before all lights were out, and the symphony of crickets in the high brush around the shack, was augmented by the breathing of a dozen men.

About ten o'clock next morning, Skidmore entered the laboratory to get his graflex camera. He had left it on the big work table under the skylight, near the little improvised cage. Glancing toward it, he was surprised to see the netting neatly slit open, the chrysalis gone, and in its place, a short note scrawled in lead pencil, on the margin of a scrap of daily newspaper! He picked it up and read the following:

"Gentlemen: I regret to deprive you of your little treasure, but I also possess scientific curiosity, and have no qualms, since this is undoubtedly the rightful property of the Smithsonian Institute."

Skidmore rushed back into the living room where the men were tumbling out of their bunks, or getting dressed for breakfast.

They were electrified by the news, and rushed in a body into the laboratory to look at the empty cage.

"Why the devil didn't he take some of our money and let the chrysalis alone?" blurted out Mueller, who now appeared in very baggy pajamas.

"Now don't get your Dutch up, Doc," retorted Kenworthy; "let us sit down to breakfast, and calmly analyze this theft."

"That's right, Professor, you are somewhat of an amateur detective, if all the reports from Chicago are true," added Scoefield.

In truth, the noted astronomer was an insatiable consumer of detective stories and criminology interested him as a divergent line of thought. The savory odor of percolating coffee, hot bread, bacon and eggs, assailed the nostrils. Appetites were keen, and once again, the big table resounded to a noisy meal.

"Mr. Skidmore, please give me that note; I'd like to glance at it for a moment," requested Professor Kenworthy, after the breakfast was well under way. He scrutinized it carefully, and then turning to the men, said,

"I feel certain that the mere writing of this note will prove the thief's undoing. It indicates a small and egotistical type of mind that would take time to express his taunts at the risk of discovery. The reference to the Smithsonian Institute is simply to throw us off the trail. It is unthinkable that anyone on that staff would be involved."

'Good! Good! Professor" several shouted, while Dr. Mueller interrupted to say, "I know the Smithsonian people personally. They are a very loyal and worthy group. You can rest assured they had nothing to do with this."

"All right; now to proceed further;" continued Kenworthy, "this piece of paper is of such poor quality, that it is certainly a scrap of one of New York's dailies. The local Vermont papers with their small circulations, issued once or twice a week, usually print on heavier weight and whiter quality. The very fact that Mr. Skidmore's lens, which was on the work table beside the chrysalis, was not taken, shows that we are not dealing with a common crook. The motive must have been curiosity, or probably material for a 'story' for one of the cheaper, popular science journals. They are usually hard pressed for something new and astonishing.

"WHEN I received the invitation to spend the week-end here, as I recall, it came in a blue envelope with a constellation printed on the back. That is a very startling and original manner of reminding club members of the meetings, but it is also a source of leakage in your seclusion. You men come up here to get away from the cares of big business. There is no telephone, no stock ticker, the place is inaccessible except by a dirt road over the hills. You depend on Mr. Thompson for food supply and haulage back and forth to the village. You go to a great deal of trouble to get seclusion, and then advertise your meetings to the world in this way.

"Let us presume that one of these invitations fell into the hands of a reporter. He would come up here and follow one of us out to the shack. It is too far to walk and there are no livery stables any more, where one can hire a horse. He must keep within sight of the person he is following, so he would probably use a motorcycle. I was very fond of this sport as a high school boy, and by picking the good edges, I could travel any road."

"Wait, wait, Professor! interrupted Scoefield, "there was a motorcycle unloaded at the station, and I think I heard it down in the valley, as I was walking up to the shack."

"Very good, Watson," retorted Kenworthy, smiling. The table roared, and shouted, "Go on, go on!"

"Having established this faint clue, we may presume that our covetous friend came well-equipped. He may have gone so far as to have a pair of head 'phones, several hundred feet of telephone wire, and a small microphone, which could be attached near one of the open windows. This, equipped and astride one of those big oaks yonder, with a pair of high power binoculars, he probably enjoyed the evening about as much as we did, except that he may have gotten chilly and cramped in his position. I hope he did.

"If I thought, for an instant, that this man could be apprehended before he got back to New York, we might commission Fred to hustle down to the farm, saddle a horse, and dash into the village like Paul Revere. However, I understand from Mr. Thompson that there are but two trains a day leaving for New York; the milk train, pulling out around three o'clock in the morning, and the second one at noon. Rest assured, our scientific friend caught the milk train; he is not loitering around Oakdale this morning; or, he may have motored South to the next town, got his breakfast, and waited for the last train.

"Let us assume that he returns to New York. He will immediately go to his rooms and rig up a cage similar to the one we have here. If he has no direct sunlight, he may try to hatch the chrysalis with a sunray lamp.

"It is only by the process of elimination, that method so ably employed by Sherlock Holmes, that we could possibly trace this fellow after he arrives in the metropolis. Let us assume he is a reporter; what paper does he work for? I don't think the daily papers are a serious consideration, although there are eight or ten Sunday papers which usually run one or more popular science articles in their magazine sections. These inaccurate and grossly exaggerated space fillers are nearly always signed, and seldom deal with entomology. Earthquakes, microbes in drinking water, monkey glands and monstrosities are the usual themes. If we dispose of the newspapers and search among the scientific journals, we probably could narrow considerably the horizon. You men are not only contributors, but are acquainted with many of the writers for these publications.

"Suppose we go to the editor of one of the leaders: say, *'Science and Invention.'* In the editorial offices, we can obtain access to the exchanges and from them get probably half a dozen editors' names. Go to these men confidentially, in the name of the Astronomical Club, state the facts, and if I am not very much mistaken, you will get a list of names; maybe ten or twenty. It will be exasperating, running down these men, so many wild goose chases, but you will find that they know each other, and somebody wanting a legitimate story may squeal. It is possible that the whole search could be wound up on Monday. There is no use going to Printing House Row today or Sunday. Editors are away over week-ends just as we are. On the other hand, it may be too late. When chrysalis decides to hatch, it loses no time."

"That is so," interrupted Skidmore, "they usually hatch between nine and four on sunny, windless days, and never in rainy weather."

"I'll go, I'll go!" cried Scoefield, at this point. "We traveled half a million miles for these fossils, and we are not going to lose one. I will go down to the farm and sleep there, and Thompson will take me in with his milk."

"So you have another excuse to hang around the farm Sunday night, Fred," slyly added Burroughs. "By the way, when does Thompson's daughter return to Mt. Holyoke?"

"Shut up!" retorted Scoefield, whose face flushed for a second, as the men nudged each other.

"It is a pity to spoil Fred's vacation; he needs it quite as much as we middle-aged men," observed Dr. Mueller.

BREAKFAST over, the members scattered each to his hobby, while Professor Kenworthy sauntered down the path to the dirt road, which he scrutinized carefully for some distance each way. The tracks of the motorcycle were clearly discernible in the heavy clay, the place where the rider had stopped, and numerous cigarette butts indicating a stay of some duration. Nothing beyond that was discoverable except the motorcycle had not returned, but continued on the road. This fact puzzled the Professor as he meandered down to Thompson's farm. He found the old farmer in the barn pitching hay. As it lacked but a few minutes of noon, Thompson carefully laid aside his fork, when he saw Kenworthy, and coming out of the barn he invited him into the spring house to have a glass of buttermilk.

As they chatted, the Professor related the facts of the strange disappearance of the chrysalis, and made inquiry about the length and outlet of the road. It appeared that the road ran by a devious route deep into the hill country for about 12 miles, and then cut across a concrete state highway leading directly south to Rutland. This was an important clue, and would have to be run out while the tracks of the thief were still fresh. No time could be lost, as the sky was clouding up and a slight shower would destroy the trail. As Kenworthy hurried up to the clubhouse, Thompson hitched his best driving horse to a light buggy.

These details were related to the men, and after a hasty lunch, Scoefield hurried down the hillside to the farm. Kenworthy watched him down in the valley approaching the house, and noted a figure in white sweater and knickers get into the buggy beside him.

"Well, Fred's detective work won't be very accurate or thorough, under the circumstances," he dryly observed to Mueller, who stood beside him on the porch.

"Don't fool yourself, Kenny," retorted the Doctor, "Miss Thompson is majoring in biology at college, and will probably be keenly interested."

Kenworthy sighed. "At any rate, they will enjoy the full moon tonight."

Fred did not disappoint the men, for when he returned that evening he reported that he had followed the trail

all the way to State Road, where the tracks turned sharply to the left, indicating that the motorcyclist had headed for Rutland, where the thief would have the choice of frequent trains going south.

Monday morning found Fred back in New York, sleepy and tired after a five-hour trip, in spite of dozing most of the way. Fortunately, he picked a taxi driver who entered into the spirit of the chase, for he was literally raced from publisher to publisher. His fame, which both bored and embarrassed him, proved the open sesame to the editorial rooms. He was surprised at the wide circle of acquaintances these editors had. They really seemed to know everybody who typed a line in the metropolis. He was swamped with names, but kind assistance narrowed down the list to a possible dozen.

There was nothing else to do but call on these men individually. Then the wild goose chase began. It was most discouraging; several of the writers were out of town, other were out digging up copy, or had dinner engagements. The afternoon appeared to be wasted, since only four men had been actually interviewed.

Hot and exhausted, Fred returned to his office to change his wilted collar and freshen up a bit before going to the Engineers' Club for dinner. He would rest an hour or so and pursue the trail again in the evening.

It was after 5:30 when he walked into his office. He was not surprised to see the door ajar, for he knew the cleaners would be at work at this time, but it was quite a shock to see a man on his knees rummaging through the waste baskets, letter by letter.

"What are you doing here?" he demanded. The man started up at the sound of his voice, as if shocked by electricity.

"Why boss, I'm collectin' post marks and stamps for a fellow; he's a bug on stamps and he pays me to go through the baskets."

"Well, that's curious; I do that myself! By the way, what are you specially looking for now?"

"Oh, he is trying to get the post marks of every town in New England. I am working on Vermont now."

"Is that so; well I don't get many letters from that state. Let me see, oh, yes, yes, there is one; it comes in a blue envelope from Oakdale. Did you notice that one?"

"Yes; I got that one about three weeks ago."

Fred backed against the door, his eyes flashing in anger.

"You are a damn liar and spy for some reporter!" he shouted, as he dropped off his coat and deliberately rolled up his sleeves.

The man's face blanched as he stared dumbly at Scoefield. After a moment, he replied, "Say, boss, us janitors is entitled to salvage out of the baskets, ain't we?"

"Now look here, man, I know you have your living to earn and you try to turn a penny wherever you can, but the fact remains that you are working for a crook. I am going to ask the building superintendent to transfer you to another floor. Never enter my office again and you are not getting out now—until you give me the name and address of the fellow you sent that letter to. If you don't tell me the truth, you will be out of a job tomorrow."

The janitor measured with his eye, the youth and physical perfection of Scoefield's six feet of manhood. He had been caught like a rat in a trap, and after all, it had not paid very well; might as well make a clean breast of it. Anything to save his job. He hesitated for a moment, and then, reaching in his pocket, he produced a large stamped and addressed envelope, which, with trembling hand, he handed to Scoefield. Without another word, he stooped and gathered the loose letters into a burlap bag; then taking up his dust-pan and brush, he trudged out of the office and down the hall.

Fred studied the address.

Michael J. Hawk,
No. ——— Third Ave.

"A great piece of luck," he mused, as he searched in vain through his list. "Probably an assumed name, but if Professor Kenworthy's deductions are correct, you are surely the man, Mr. Hawk, and since you live in one of the toughest sections of the city, I think it would be wiser to call on you in daylight."

EARLY next morning, Fred 'phoned to the taxi driver he had employed on Monday and briefly explained the mission. They threaded their way across town amid the chaos of the morning rush hour, and shortly found themselves before a dingy walk-up apartment house. The driver insisted upon accompanying Fred and stood in the hall while he interviewed Mr. Hawk.

A sallow-faced individual of about forty, with sleepy eyes, and wearing a bathrobe and slippers, ushered Scoefield into the literary workshop of a typical hack-writer. What a room to describe with its shelving, thousands of books, old magazines and newspapers. Against the far wall, which was pierced by a double window, extended a long work-table, burdened with a great confusion of writing materials, typewriter, fieldglasses, radio, camera and a microscope under a glass dome.

Scoefield took in the room and the man, in a swift comprehensive glance.

"Mr. Hawk, I believe, writer for *Daily Science, The Chicago Quarterly of Natural Science, The Robot International, The Philadelphia Sunday Transcript?*"

"You flatter me, dear sir. Pray to whom do I owe the honor of this early morning visit?"

"Scoefield is my name, I am a member of the Vermont Astronomical Society."

"Please be seated, and have a cigarette," Mr. Hawk suavely enjoined.

"Thanks, but I haven't time to pay a social call. The facts are these:

"On Friday night a fossil chrysalis was stolen from our club-house. It was one of a number of fossils brought back from the recent lunar expedition."

"Oh! So I have the pleasure of meeting Frederick Scoefield, the second Lindbergh, the inventor of 'The Moon Strollers,' etc., etc. Indeed, Mr. Scoefield, you are such an elusive person to interview, what can I possibly do for you, in exchange for the chance to get an exclusive 'story'?"

"As I said before, a fossil chrysalis was stolen, and after careful investigation by a noted criminologist, the trail leads directly to your rooms as the repository of that article. Please don't register amazement and indignation! I am not going to argue with you. I admire the trouble and expense you have gone to, to commit a worthless theft. Now, understand this clearly, if you don't come across immediately, we will have to temporarily suspend your animation for the present, while these rooms are searched. Oh, don't think I came here

without a search warrant, and without the proper authority. Give me that chrysalis. Even if it is hatching, you could use it as news. It would be just one straw too heavy on the public's back of credulity."

Hawk looked at Fred with narrow, shrewd eyes as he thought rapidly. "Mr. Scoefield, you astonish me with your statements. What I need is a good 'story'; news is very scarce at present since the public is fed up on that 'trip to the Moon' business. What would it be worth to you if I said I knew the location of your quest?"

"Look here, man. Give me that chrysalis at once. And if you ever prowl around the clubhouse again, it will probably be at the peril of two barrels of buckshot. And please let the Astronomical Club alone. If you need another Lunar story, why don't you hang around the Boston Philological Society? They have about completed the translation of the basalt discs. That will be officially published in some dry journal of philology, of course, but a popular write-up with several clever drawings, would take well in the magazines."

"Mr. Scoefield," he replied, "I must say you are a scholar and a gentleman. I will surrender the chrysalis and apologize for the trouble I have put you to, although I have no regrets—I have secured both a story and a pleasant interview. Please make one prediction about the basalt discs."

Scoefield looked indignantly at Hawk, but decided to humor him.

"When the inscriptions are published, there will be another expedition, and another story."

Hawk's bedroom window faced the south, and Fred followed closely after him as he went to the window and took the precious chrysalis from a gauze bag, which was pinned to the top rail of the lower sash.

For full five minutes, in the warm yellow sunlight, Scoefield examined the chrysalis. A strange metamorphosis had taken place within the past two days. The color had changed and the pupa casing seemed so brittle, it might burst at any moment. Mr. Hawk looked covetously at the thing, as Fred placed it within a fold of cotton in a small metal box, and left the room abruptly.

The chrysalis was going to hatch, and shortly, too; that was certain. How to get back to Vermont quickly!

"The aviation field, at once, fast as you can!" he cried to the taxi man, as they hustled down the stairs. Thirty minutes more and he was at Long Island Field.

"I must have an airplane to take me to Thompson's Farm at Oakdale, Vermont, at once!" he demanded.

"We are very sorry, Mr. Scoefield, but there is not even an emergency landing field within 40 miles of Oakdale," replied the traffic manager.

"That means nothing to me. I'll drop by parachute. I will sign a statement assuming all risk."

TWO hours later, a trimotored plane reconnoitered over the Thompson farm. Fred remained calmly seated while the aviator pulled a lever and dropped him through the emergency trap. A tiny white puff ball appeared behind the plane, then a second later, the pilot parachute had pulled out the big silk enevlope which spread like a giant mushroom. Dangling and swaying in the gusty mountain air, Fred dropped safely to earth, with his precious cargo strapped on his chest in the metal box. Willing hands untangled the cordage and literally carried him to the shack. It was not a moment too soon, for the chrysalis had split down the thorax and the pupa within was in a state of convulsive motion.

"It won't be long now," observed Skidmore, as he placed the chrysalis in its loop of silken thread, which held it in an upright position on the ancient twig. "There is nothing in nature quite so marvelous as to see the emergence of the butterfly from its chrysalis."

The men sat spell-bound, around the table, as little by little, the head then the thorax, and lastly, the abdomen struggled free from the pupa case. The wings folded like an umbrella around the body, slowly spread out as the blood could be seen swelling the thick marginal veins. A beautiful thing, jet black, and with a wing span of at least 12 inches. It had six legs, the frontal pair being atrophied and hugged close to the body. The entire wings and body were covered with long black hairs, causing it to resemble the *Vanessa Antiopa*—a hibernating species of North America. On the under side of the frontal wings were two white scent pouches, corresponding to those carried by the male Monarch. As the marvelous creature slowly waved its wings, it fanned out a heavy perfume both nauseating and overpowering in its odor.

"Close all windows and stop smoking, boys," commanded Skidmore. "We don't know how quickly this thing will be ready for flight. I, for one, think it should be put immediately in the cyanide jar."

"Just a few more minutes, Skidmore," spoke out Dr. Mueller. "We should study its reactions to various external stimuli, to discover what vestiges of instinct or intelligence remain to this, the Moon's last living creature.

The head, with huge, single lensed eyes, turned on an axis from side to side, as it looked around the table with a doleful and apprehensive stare. It turned on its perch, seeming to regard the men one by one. Evidently its eyes were long focused, for it followed every move of Skidmore as he quietly placed the glass bell of cyanide on the table. Its wings now fluttered spasmodically, as wave on wave of nerve-deadening perfume stupefied the senses. Nerve centers were paralyzed as the men breathed the heavy air laden by some subtle narcotic. In spite of his strong will and mental alertness Skidmore's senses reeled; he managed to clutch the table and break his fall as he dropped heavily to the floor. Dr. Mueller lost consciousness with his eyes staring wide open. Professor Kenworthy slid off his chair with a thud.

With dish towel in hand, Peters the colored cook, rushed into the room after the second shock. The men unconscious—the giant butterfly on the wing—the heavy air, he could not comprehend, so he frantically raised the windows and then batted savagely at the thing with his towel. Hardly a second passed before it sensed the draught and gracefully darted out the window!

The cool air revived the men within a few moments. They staggered to their feet dumfounded. Skidmore was first to break the silence.

"It is gone, boys. I should have acted more quickly; besides, I should have warned Peters. Oh why did he let the thing get away?"

"Have no regrets, Skidmore," muttered Dr. Mueller. "Just listen to him singing in the kitchen, oblivious of our great loss. After all, the question will always arise —if he had not opened the windows in the nick of time, would we probably not have all been dead?"

THE END.

In the Realm of Books

(Mostly Scientific Fiction)

Facts About the Ants

"The Astonishing Ant," by Julie Closson Kenly. *Illustrated by Henry C. Kenly. Published by D. Appleton & Company, New York; London. Price $2.50.*

WE take special interest in reviewing this very attractive book. The readers of AMAZING STORIES have had a number of stories about ants presented to them in our pages. Some of these stories must have appeared rather remarkable or even extravagant, as predicating such power and intelligence for these little beings. In this book there is no science fiction, but scientific truth, a detailed account of the insect whom the author terms "astonishing." It makes the ant appear more wonderful than it has been depicted in our pages. A clue to the work may be obtained from the titles from a few of the chapters, such as "Seeing Antland," "Ant Weddings," "Ant Housekeeping," "The Ant Underworld," "Mushroom Growing Ants," and we even have a chapter on the Termites, whose popular name is White Ants.

It can well be seen that twenty chapters such as these will cover an immense amount of ground. The most wonderful stories are told about these insects, whose ways seem almost human. Interesting as the subject is to the distinguished authoress, she says there is something sad about it, since the Department of Agriculture in Washington announces that ants destroy millions and millions of dollars worth of property in the United States alone, to say nothing of the combined losses.

In the tropics, ants are still worse than in our country. One curious thing told us is that there are some 1500 kinds of termites (white ants).

Despite the fact that the book seems to be written for children, we can hardly say too much in its favor for perusal by grown people. It has between two and three hundred pages of most interesting text and in the neighborhood of forty very wonderful illustrations by Henry C. Kenly; besides these there are numerous little tail pieces, every one of special interest. Author and artist have certainly distinguished themselves in this book and after you have read it you will come to the conclusion that the stories about ants which we have given must all exaggerated except, of course, in the obvious necessity of making a good story.

Another thing; we were glad to see a reference to Thoreau's description of the Battle of the Ants, which he saw when he was living at Walden Pond, in his hermitage.

The destructive powers of the termites and their concealed activities are very curious. They will reduce the wood of a piece of furniture to dust without disturbing the outside, so that a chair, intact to all appearance, will crumble if one sits upon it. They build clay nests twenty feet high. It is in Africa that these great structures attain, what may be termed, the perfection of size.

The book would be specially good reading after some of our stories in this magazine.—T. O'C. S.

Again—Mr. Fort

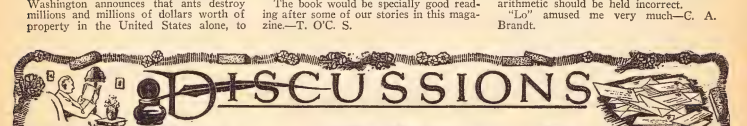
"Lo," by Charles Fort. *Published by Claude Kendall, New York. $2.50.*

IN spite of very flattering comments by such shining literati as Theodore Dreiser and Booth Tarkington, I can only say that I neither share their views not their enthusiasm. Mr. Fort is apparently presenting an outstanding collection of records of unusual happenings and unexplained phenomena going as far back as 1791. In this book, as well as in his "Book of the Damned," there is an oft-occurring reference to mysterious rainfalls, causing the appearance of frogs, fishes, worms, etc. The generally accepted explanations have never satisfied Mr. Fort, so he must attack any and all explanations of any and all phenomena as totally incorrect and absurd.

He is an expert mountain maker. Given tiniest mole-hill, he will make the Himalayas hang their heads in shame. His views on astronomy are somewhat peculiar and astounding: The stars are about a week's travel away, to him, the earth is pancake-shaped. And it seems to rile him that scientific bodies do not welcome improved theories or explanations with wide open arms.

"Quien Sabe" as our Spanish friends have it. I am convinced that Mr. Fort would vigorously deny, that two times two make four and that any unquestionable scientific proof for this small piece of arithmetic should be held incorrect.

"Lo" amused me very much—C. A. Brandt.



In this department we shall discuss, every month, topics of interest to readers. The editors invite correspondence on all subjects directly or indirectly related to the stories appearing in this magazine. In case a special personal answer is required, a nominal fee of 5bc to cover time and postage is required.

A CANADIAN GIVES AN INTERESTING ACCOUNT OF HOW HIS COUNTRY REGARDS STANDING ARMIES AND "PREPAREDNESS."

Editor, AMAZING STORIES:

I enjoy very much your stories and even more the discussions.

I think the scientific truth to be extracted from your stories is over-estimated—the greatest asset in science is the desire to know more than they implant, thereby causing many readers to commence a deeper study.

Many of your stories are too Amazing. Among these I place "The Skylark Three" and "The Black Star Passes." The moving of a planet in "Black Star Passes" is impossible as deviation from its orbit would cause its destruction. "The Skylark Three" is too full of almost impossible possibility and too full of destruction.

"The Fourth-Dimensional Space Penetrator," which found so little favor with many of your readers, I considered excellent, ruling out the penetrator, which was impossible, the theme was well thought out and the possibility of Life on an Electron has a scientific possibility and what enhanced it there was no fighting but cooperation between scientists.

As we trace humanity from the dim recesses of the past, we find that from a one time when man delighted in slaughter, picturing himself even in heaven (Valhalla) drinking out of the skulls of his foes, he has progressed 'til now he sees war in its true aspect, a horror we are seeking by all means to abolish.

Therefore, is it not possible that the future on earth will find world peace. Also that, should the secret of space travel be found and intelligence further advanced than ourselves be found, is it not probable that they will conform to the same Evolutionary law and be peace loving races?

You may reply that you must have action. May I suggest that such action be found in planets like Venus? The younger worlds, where the monstrosities that found places on our world in the pre-glacier age live, and what a field for romance the moon holds. Or a dying race in the ages past, fighting an unsuccessful fight against nature, while in their sight, but just beyond reach, a larger world, our earth, just beginning a life supporting era, what desires, what titanic efforts must have taken place on the now scarred face of the moon before final *fade* was written all too plain.

Lastly, as a Canadian, may I state the stories dealing with world affairs are too American (U. S.)? Your stories are fine scientifiction paper like AMAZING STORIES. We Canadians admire the untiring energy and many excellent qualities, in fact we humbly claim to be very much like you.

We know, however, that scientific and also social achievement is world wide. The contributions to world achievement vary with the characteristics of the race. Britain gave exploration and development and a fine literature. Germany— music, France, Medical science. America is giving a social and mechanical advancement previously unknown. Above all, men like Einstein, Eddington, Crookes, Millikan and Jeans are international, so please let it be understood that as today science is world wide, so too in the future will it depend on the contributions of men independent of race or creed. As with science, so with courage, honor and love of truth.

I notice in December issue a New Zealander brings up the subject but he implies that strengths of present day armies and navies are the important factors. We Canadians think differently, we with no army or navy, who can boast less wars than any country, we who have never been guilty of aggression or an aggressive spirit, believe that the important factor is the contribution each country gives to the sum of world knowledge.

E. W. Chadwick,
112 Adelaide St.,
Winnipeg, Manitoba, Canada.

(If our magazine and five others were to take up a line of independent study it will have done very good work. Our stories have had a strong fictional element and there is only room for enough science to inspire the reader with desire for further instruction. We are very glad to get a criticism from Winnipeg, which has become a true metropolis of the North West. The writer has very pleasant recollections of a visit he paid there some years ago. World achievement is certainly world wide. The improvements, even of

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the last decade have operated to bring Europe and America closer together. We quite enjoy your statement of the feeling of Canada, which, with an immense range of country, dispenses with army and navy. The United States are getting to be very repulsive in their ways. Formerly it was a refuge for the poor of other countries, and today we have a Chinese wall around us. We maintain the "noble experiment" by shooting and killing and the result of our ways is, very little freedom. The lines in Goldsmith's poem:

"How small of all that human hearts endure
That part which laws or kings can make or cure"

certainly do not apply to America. The writer has a feeling that density of population interferes with personal liberty. When America had a population of 10 or 15 millions, it was very easy-going place, compared to what it is at present. The above lines are quoted from memory. They are attributed to Dr. Johnson who is supposed to have inserted them in Goldsmith's "Traveler."
EDITOR.)

AN ALLEGED "RECURRENT" PLEA WHICH WE FIND DOES NOT DO MUCH "RECURRENTING"; THE UNDERLYING TOPIC OF THE NAME "AMAZING STORIES"

Editor, AMAZING STORIES:

That ever recurrent plea which usually pops up several times in every issue of AMAZING STORIES—the request to change the title to "Scientifiction," is both the subject and object of this letter.

It may interest you to know that, as an engineer of the transient variety and consequently, constantly in contact with others of this profession, I have come to the conclusion that a very large proportion of us are confirmed readers. Possibly this is unknown to you, for it is read as a relaxation, due to the natural limitations of their lifework, and due to their inherent progressiveness, neither of which are conducive to correspondence.

AMAZING STORIES, while a title which is admittedly attention-holding, does not indicate or suggest the actual contents of the magazine. It is misleading, and while it may attract a few *temporary* readers each month, they are lost as readily, for the contents do not warrant the title implied. I would venture to say that nine out of ten of your regular readers accidentally "happened" on one of your issues, as I did, and in casually perusing it, discovered a type of fiction they had long sought. This is true with one hundred per cent. of those of your staff whom I know.

I won't tell you of the struggles that rage within me each month, as I approach the newsstand for my copy of the magazine. I think the ears as I ask for AMAZING STORIES, not because I am ashamed of the contents, but for the misleading title and cover. For the name reason, I object to reading it in trains, or anywhere in public.

In your answer to one letter in the January issue you state that "Scientifiction" is a coined word, and consequently poor English. I'm surprised—and I still would be surprised if I had read it in the "Atlantic Monthly." We dear sir —all new words are coined—you will find hundreds in the dictionary as a result of the Great War. I believe "Radio" is coined. But why go into details?

Why not try an experiment? In one issue inform your readers that the title will be changed in the following issue to SCIENTIFICTION; put it in a nice conservative jacket and get the results, and if my prediction of a large increase is not forthcoming, come back on me.

Your regular readers are surely of the type that would welcome a little experimentation. *Yes*, if consistent, should.

The result should be mutually beneficial.

M. S. Wexler,
New London Creedon,
Ottawa, Illinois.

(AMAZING STORIES has gone under that name for so many years that we hardly feel it would be good policy to change its name, especially when the magazine is doing well. The title is an old one and entitled to respect for that reason. The covers are done with the greatest thought and care and have won encomiums as well as intelligent criticism from many of our readers, as you will find by looking over the Discussions columns. In regard to coining of new words, anyone who looks at Webster's Unabridged Dictionary will feel that we should go very slowly in introducing new words into the English language. Experimenting with a popular magazine is a dangerous pastime but we hope that you realize that we particularly welcome such letters as yours, where a correspondent shows himself a good thinker and you certainly do that.—EDITOR.)

BRICKBATS GALORE, AN AMUSING AND INTERESTING LETTER.

Editor, AMAZING STORIES:

Using the "Menace from Andromeda" (April, 1931) as an opening, I hereby dive in that opening to pen and pan you.

I understood from the story the hero's discovery of "Alcoreth" in the nebula of Andromeda, took place when "Alcoreth" was in the throes of an organic upheaval. Andromeda, being nearly a million light years from us—ergo —the view that he first caught got on his photographic plate took place nearly a million light years ago and traveling at the speed of light, the protoplasmic emanations would strip the world of Alcoreth in a million light years! In the future, from the time he saw the scene. To make myself plainer, it would take "nearly a million light years" for an article delivered from "Alcoreth" to reach us, yet it obligingly (for the story) took just over a year. All of which proves that this story ended "nearly a million light years" too soon. Our minds, though, of course, have to be elastic enough to stretch from here to Alcoreth, without snapping under the strain, this being made possible by the fact that we *will* read these stories.

I am by nature a critic, an amateur critic of a low rating, but the small, petty kind, that take a keen delight in finding fault (mentally) with everything that comes their way. I look forward to your publication each month, fume when it has not arrived at the newsstand, etc., read it, enjoy it, review your editorial, sneer at the letter writers at the back of the magazine, blush when I see the bizarre pictures on the cover, tear them off so that nobody will see what I am reading, gloat in the fact that every so often I found an illustration that actually coincides with the story, along with the drawing being architecturally and mechanically perfect, and smile arrogantly when I find a disparity, simple mathematical or mechanical mistake, but, however, that is my own peculiar way of living and enjoying life, and for the four years I have been reading your magazine, never yet have I regretted buying a copy. Your bad stories show up your good ones and *vice-versa*. Some of the stories that you offer to the public are analogous with presenting Einstein with a dime novel and also with casting strawberries before donkeys. But I'll take all that you offer, and promise you, never again will I hold correspondence with your office (unless I come across a 100% A-1 illustration).

G. Hyde Purdon,
176 Caledonia Road,
Toronto 10, Ontario, Canada

(Your very amusing letter suggests to an impartial observer that your "peculiar way of living and enjoying life" is hardly the right one, for it does not seem a correct view of life to find your pleasure in detecting the weakness of other people. You are evidently looking at the Letter Writers" at the end of the book. Personally we consider the "Discussions" column very interesting reading and many readers turn to that the minute they get the magazine. Your tearing off the covers is a very poor practice. You have no idea of the amount of thought given to them and they are all drawn by excellent artists. Your doing this indicates sensitiveness on your part and sensitiveness is a quality which may make life rather unhappy. Do you know that there have been many critics, who quite admire dime novels and that one of Einstein's recreations is the very simple one of sailing about in a little boat? But don't let us lose you as a correspondent, for we thoroughly enjoyed the spice in your letter.—EDITOR.)

A HIGH TRIBUTE TO MR. VERRILL APROPOS OF HIS STORY ABOUT THE BLOOD CORPUSCLE

Editor, AMAZING STORIES:

Although I have been reading AMAZING STORIES for two years, this is the first letter to the Discussions Columns. I have just finished reading the February issue. My reason for writing this letter is in congratulation of Mr. Verrill on his story, "The Exterminator." To my way of thinking it is wonderful.

Being a premedical student at the University of Maine, I have had some laboratory work on the human blood. After reading about one third of the story, I came to the conclusion that the "Exterminator" was a white blood corpuscle; which surmise turned out to be true.

Mr. Verrill's way of describing the life of the "Exterminator" was very interesting. He followed the creature through the blood stream, seemingly reading its mind. He described its life when the patient was in good health, and

when he was sick. Mr. Verrill's description of the corpuscle's "thoughts" was marvelous. It seemed to me that I was with the creature when the vessel was broken.

The only thing in the story that puzzled me was the name of the disease that the patient had when the blood was drawn for the slide. I would like to know what it was.

There is, in my opinion, only one fault with your, pardon me, "our" magazine, and that is: it contains too many stories about the same things. Why not publish some stories about surgery? Also, I would like to see more stories by Miles Breuer, Dr. Keller, Mr. Verrill, and Captain Meek.

Edward H. Cook,
55 Bennoch St.,
Orono, Maine

(We have, before now, said that Mr. Verrill was a well-known author. He has written a quantity of matter, much of it serious, on archeology, ethnology and similar topics, much on topics interesting to young people and part of it fiction. Some of the fiction was for the young and that is conceded to be the most difficult of all fictional writing. We certainly have had stories about surgery, telling of almost miracles which were supposed to have been done by the operators. As one of the very last we would cite, Dr. Keller's story, "The Ambidexter," which is very distinctly surgical. It tells of a horrible surgical event perpetrated by an Oriental on an Occidental. We are sure you will see many more stories by the four favorite authors whom you name in conclusion.—EDITOR.)

A VIVID LETTER FROM A FOUNTEEN-YEAR-OLD CORRESPONDENT

Editor, AMAZING STORIES:

Sanap! what's happened in the last four or five months to make good old AMAZING STORIES so swell? I never dreamed a magazine could be so good. Why—do you know in the last few issues there wasn't one story which I didn't consider excellent? If they continue to get any better I'm afraid you will, in a short while, exceed all limits of improvement.

Here is my way of rating the stories in the January number:—*Excellent:* "The Prince of Space," "Wanted—Men," "Under the Sea," "The Iron Hand," "*Via* the Time Accelerator," "The Drums of Tapajos," "The Act of Retiquj."

Now for the stories which I think have been excellent. All except the November and January issues. Reason? I do not think they were well chosen. Why, Mr. Editor, don't you pen those nightmarish monsters on the cover of your magazine? Speaking of the covers and those nightmarish monsters reminds me of the experience I had with one the other night.

It was about midnight and I was thirsty. So, in view of the latter fact, I switched on the light and started on the way to the bed. All of my glance happened to rest on the cover of the November A. S. You know, that one where "The Globoid Terror" is about to settle the "hash" of his three victims. Well sir, being as I was only half-awake it startled me so that I let out a yelp and fell on the floor, flat on my face, with all my bed-clothes on top of me. Before going back to bed I put the magazine at the bottom of a pile of others.

Before closing the cover discussions, I wish to ask a question. What was the round red and yellow thing on the January cover of "Via"?

It may interest you to know that I have gained for you exactly nine new readers, three of whom are teachers.

Although AMAZING STORIES conveys almost everything I can wish for, I will never forgive you for letting ——— get "The Snake Mother." Yea I've waited it; and boy is it swell! But I would have rather have seen it in A. S.?

Jim H. Nicholson,
40 Lunada Way,
San Francisco, Calif.

P.S. What is your advice to an amateur author?

P.P.S. I am a "mere boy" of 14 years.

(This letter comes from a member of the Boy's Scientifiction Club. As the reader will see, he is only fourteen years old. We are very glad to have teachers for our readers. We doubt very much if the picture of the "Globoid Terror" alone frightened you. You would be surprised if you knew the amount of thought and criticism that is devoted to our covers. We want them to please the serious reader, but we want them also to attract the attention of those who do not know the magazine, so these different considerations operate to make them somewhat unconventional and perhaps if we could make them still more unconventional, it would be good for our circulation. Our advice to an amateur author, which you ask for, would be to unhesitatingly try his hand at some writing, for if he fails to place it, it will be the best kind of practice; but the life of a free-lance writer is a habitual disappointment. The January cover showed the sun seen from MARS.—EDITOR.)

A TRIBUTE TO CAPTAIN MEEK; DR. BREUER'S "ON THE MARTIAN LINER;" ENDOCRINOLOGY IN A STORY

Editor, AMAZING STORIES:

I have just finished the March issue of AMAZING STORIES and felt that I should write you as to the reaction that occurred.

This issue was a fairly good one, but the story that took first place in my mind was "The Earth's Cancer," by Capt. S. P. Meek. I suppose the only reason I liked this story was because the research on cancer is my favorite hobby, or if it is not a hobby, it is a great enjoyment. Capt. Meek has always written good stories and this one appealed to me greatly. The story "On the Martian Liner" was a pure disappointment to me: I am not trying to say that the story should be placed in the scrap basket, but for it to be written by Dr. Miles J. Breuer—

"The Thing That Walked in the Rain" was a fair story as they go, but if little more endocrinology was added it might have increased the benefits of the explanation a little more; I don't know. A little comment on "The Valley of Titans"—it is true that the name AMAZING STORIES implies that things be extraordinary and fantastic but those fantastic things should have a half-way decent scientific explanation, as the magazine is also said to be *scientific.* I am not referring to the control of the speed of evolution, though that is slightly out of the ordinary: I refer to the other one, by Neyad Ehasor, about whom I would like an explanation. Also, how about some good stories on atomic energy, biology and the disappearance of women from the earth?

Arnold Wolf,
640 Riverside Drive,
New York City.

(We are greatly pleased with such letters as yours, which criticize, even favorably. You must remember that what pleases one person does not please another. Personally, we thought Dr. Breuer's story about "Leaders to Mars" was extremely good. It had adventure and suspense and we are confident that our readers as a whole enjoyed it as we did. We admit that the explanation in "The Thing That Walked in the Rain" might have been a little fuller and perhaps the "Endocrinosities Gland" might have been added to the comments. You are getting stories about two of the subjects you mention in the last lines of your letters.—EDITOR.)

A STORY WHICH IS AMAZING BECAUSE IMPOSSIBLE EVOLUTION. THE BENEFICIAL EFFECTS OF THE

Editor, AMAZING STORIES:

This is my first letter to our magazine and I wonder how you will like it.

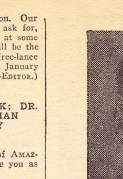
Your stories are "It," but I would like to see them a little more "amazing." The story which I think is the most amazing is "World Atavism." It is amazing because it is impossible. Man did not descend from a mammal, and since his creation remained to be man and will continue to be so as long as the world exists, as the Bible goes for all other creatures. Whatever man does is accomplished by evolution, is this not true?

Indeed, the sun has many beneficial powers, and if the theory of evolution were true, I think such a thing as World Atavism could be possible.

I really enjoyed the story, and I hope that there will be many more stories as good as this one. The February issue you printed on different paper, making the magazine much thinner. I was glad to see this, as I bind all of my copies into books.

Ray Ullmann,
620 N. Simmons Ave.,
Kirkwood, Mo.

(We will let this letter speak for itself. There are all sorts of views on the subject you allude to. In the 80's and 90's of the last century, rigid views on evolution held sway, but it is very interesting to see how the points of view have been changed in the present century by such men as Jeans, Millikan, and others, men equally distinguished, having individual ideas about this world of ours.—EDITOR.)



RUDOLPH L. DUNCAN, President, RCA Institutes, Inc., Member, Institute of Radio Engineers; Member, Radio Club of America; Member, Veteran Wireless Operators Association; Captain, SCR, United States Army.

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by R. L. DUNCAN

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AN EXCELLENT EXPOSITION OF TRAVELING TO THE MOON. THE EFFECT OF ITS LOW GRAVITY ON A HAMMER BLOW

Editor, AMAZING STORIES:

I am writing concerning one of the stories in the February issue, "The Man Who Annexed the Moon," by Bob Olsen. This was an interesting and exciting story, but it seemed to me he overstepped the boundaries of present-day fact a little too far without giving adequate explanation. The greatest error was in his method of utilizing the orbital velocity of the earth to get to the moon. Granting the premise that it would be possible to release the ship from the earth's gravitation, it would be possible to use the orbital velocity of the earth to get to the moon, but not in the way he suggested.

It is a well recognized law in physics that when a body is moving in a curved path there must be a cetripedal force operating inward along the radius of the curvature equal to and opposed to the centrifugal force.

Thus, the analogy, which was given of the boy towed on skates, was false in some details, for when the boy made the U turn, the ice would supply the force necessary to turn him, computed by the above statement. If this force were not present, he could not turn, as is easily shown when you run on ice without skates and try to turn. The same difficulty was encountered in early aviation attempts before the scheme of banking on turns was discovered. The rudder turned the nose of the ship, but the ship continued going in its original direction. That is, the curvature of the flight path was due to the line of velocity was changed, but the line of velocity was not.

Velocity is a vector quantity, expressing direction as well as magnitude. Momentum is measured by the product of the mass and velocity, $m \times v$. The statement that momentum was practically the same after they had made their U turn is, then, false, for the velocity was in a different direction. To accomplish this change the direction of the velocity would be extremely large at any reasonable radius of curvature, for at the velocity of 67,000 ft. per sec., or 45,100 ft./sec., the quantity $m \times v$ would be tremendous. This force was in no way accounted for in the story, but it seemed taken for granted that once the nose of the ship was pointed in a given direction, the velocity would automatically change. This is a little too much to pass without explanation.

Another minor error in the story is, also however, would have little effect on this story. From the point where the earth's gravitational force was cut off it is not wholly necessary to also cut off the gravitational pull of the sun. If it did, the earth would not then be traveling *with* the ship, but the ship would leave orbit of the moon, and thus a flight might be accomplished without the impossible bending back and change of velocity direction.

Another inconsistency was the difficulty experienced in driving the drill with a hammer on the moon. True, the hammer would have less *weight* on the moon, but the most important factor in using a hammer is not its weight, but its momentum at the instant of impact, and momentum in *mass*, which is unaffected by gravitation. The effectiveness of the hammer would be little impaired, for the force of gravity is an inconsiderable feature, as is shown by the fact that it is easy to drive a nail into a vertical wall where the force of gravity is no assistance whatever.

I like the stories and illustrations as a whole, although the illustrations are often inaccurate. For example, the cover on the February number shows the entire head of the adventurers with their sleekly combed hair, while the story distinctly says that before putting on the space suit they donned a "union suit made of wool. It had a tight-fitting hood which covered the head and lower part of face, leaving only the eyes and nose exposed." I think that this detract from the enjoyment of the really good illustrations.

Ernest M. Stanton,
716 18th Street,
Santa Monica, California

(We find your letter extremely interesting. It is a good illustration of what we might almost call a function of our work—the awakening of scientific interest by fiction. You have heard of hitting the nail on the head. It is a proverbial expression. We can compliment you on your success in hitting the nail on the head. You speak of driving a nail through a vertical wall; a still more extreme case would be of driving one still more against gravity directly up into the ceiling. We thank you for calling our attention to the slight error on the cover page.—EDITOR.)

AN INTERPLANETARY MONTHLY ASKED FOR

An Interesting Letter from the Antipodes

Editor, AMAZING STORIES:

I suppose I am slightly premature in my writing to you, as I have only seen eight of your issues of AMAZING STORIES, but I feel that I must write to you, and draw your attention to an astronomical error which Mr. Nathanson committed in his story, "The Passing Star," September issue, 1930. The third question in your Science Questionnaire is "What is the distance of the nearest star?" (see page 509). On page 509 Mr. Nathanson states that Alpha Centauri L/1/3 light years distant is our nearest neighbor in the Stellar World. This is not so. Several years ago, a faint star, also in the constellation of the Centaurus Proxima Centauri was found to be three billion miles nearer than Alpha. I am quoting Joseph McCabe, in his book, "Wonders of the Stars." Now that I have chastised you, I will try to make amends.

AMAZING STORIES, I think, is by far the best scientific fiction magazine published, and I shall proceed to treat the magazine in sections. First, the stories. They are all very good, with, of course, the exception of one or two. I think the worst I have read is "The Act of Retipu." The best I ever read is "Skylark Three." The latter story was marvelous, although I am only aged twelve, I appreciate it fully. My favorite authors are Dr. Smith, Dr. Breuer, Taylor Hansen, Jack Williamson, Miles J. Breuer, Captain Meek, and Charles Cloukey. The artists and drawings—of all your artists, Wesso is supreme. His drawings are so accurate and lifelike, that it is hard to believe that they are not photographs. Morey and Paul are his greatest rivals. He has nothing on any of the others. The discussions are very interesting. The theory propounded by P. G. Miller, that Neptune is an invader from space, is very ingenious, and should be given serious consideration. The Editorials are always very instructive and well written. I especially like the one in the September, 1930, issue, about the atom and the stars. The paper is all right, but there is one thing I do not like about AMAZING STORIES, and that is the way it is cut and bound. They fall off very easily, and one does not like to disfigure such splendid drawings as you have on the covers by pasting them on again. Interplanetary and Fourth Dimension stories are my favorites. And while I am on the subject, how about an Interplanetary monthly? I am sure it would be met with approval by readers of AMAZING STORIES. Somebody, I forget who, suggested it in Discussions.

G. Weste,
Booscy Via The Amasise,
Victoria, Australia.

(Your letter is quite surprising for one of your age. It seems as if in Australia the boy becomes father of the man at a very early age. If you go at it rightly, you can paste the cover on again when it has come loose without touching the front, by attaching your paper slip to the inside. It is very pleasant to have our cover page illustrations appreciated. You probably have no idea of the amount of thought which is bestowed upon them by artists and editors. Our next Quarterly is an Interplanetary one. It is so designated on the cover. It contains nearly twice the matter of a monthly so that it represents nearly twice what you are asking for—in other words, two Interplanetary monthlies. We have done this in answer to numerous requests, and we will be much interested in seeing how the Interplanetary Quarterly will be received. The Spring Quarterly will contain four classic interplanetary stories. We consider it quite a compliment to get a letter from an Australian correspondent. We like the young.—EDITOR.)

THE IMPROVED AMAZING STORIES

Editor, AMAZING STORIES:

I have on hand a copy of the December, 1926, issue of AMAZING STORIES and I must say it certainly has improved since that time.

In the first place the paper is much better, as are also the illustrations.

And say, why can't we have some more stories by H. G. Wells?

"The Man Higher Up," by Edwin Balmer and William B. MacHarg, is a fairly good story.

"The Absolute," by Edmund R. Kaw—poor.

"Through the Crater's Rim," by A. Hyatt Verrill—poor.

"The Lord of the Winds," by Augusto Bissieri —fair.

"The Telepathic Pick-Up," by Samuel M. Sargent, Jr.—good.

"The Educated Harpoon," by Charles S. Wolfe —very good.

Since that time the "Discussions," "What Do You Know," and "Editorials" have been added, all of which are greatly appreciated by the average reader of AMAZING STORIES.

As you notice, I have listed no "excellent" stories in the above mentioned issue, but wait until I come to more recent issues!

I make no comment on the serials because I did not get to finish them.

I now come to the Spring Edition. 1930 issue of AMAZING STORIES QUARTERLY.

The cover is excellent! When I saw that it was a scene from Aladra Septama's story, "Dragons of Space," I could hardly wait until I got home before I started reading it.

The editorial, "Scientific Responsibility," by Victor MacClure, is very good.

"Reclaimers of the Ice," by Stanten A. Coblentz, was very good. The illustrations to it were very good.

"Dragons of Space," by Aladra Septama, was excellent! The best story in the issue. In my estimation, Aladra Septama is your best writer. Keep him by all means! The illustrations to "Dragons of Space" were excellent.

"The Flying Threat," by David H. Keller, M.D., and the illustrations were very good. David H. Keller, M.D., is one of your very best writers.

"The Red Ray," by Dan Fabers, was good; so was the illustration.

All in all the Spring Quarterly was very good. Why don't you have more issues? Stories by H. G. Wells, and some by Edgar Rice Burroughs?

I haven't a copy of the Winter Quarterly of 1930, but as I remember it, "Tani of Ekkis," by Aladra Septama, was the most interesting story. It is one of the best, if not the very best story I have ever read. "White Lily," by John Taine, was good, but it was not *amazing* enough. "The Astounding Enemy," was a very good ant story. I hope you will have more ant stories in the future. "Dirigibles of Death," by A. Hyatt Verrill, was too gruesome. It was not as good as his stories generally are.

The illustrations by Wesso and Morey were very good, especially the cover picture.

"The Raiders' Viewpoint," was too short.

"The Universe Wreckers," by Edmond Hamilton, which began in the May, 1930 issue of AMAZING STORIES Monthly was an excellent story from an excellent writer.

L. E. Connerley,
Jacksonville, Oregon

(We are giving, in every issue, the three stories you mention, but the Editorials started with the first number, the Questionnaire and the Discussions came later. We feel that it is a great compliment to the results of our efforts to receive such letters as this. An editor has to be insensitive to criticism, which he is sure to get, whether he does good or bad work, so you can see that your letter makes pleasant reading for the editors whose effort is to please our readers. —EDITOR.)

A PLEASANT THOUGHTFUL LETTER FROM AN ENGLISH CORRESPONDENT

Editor, AMAZING STORIES:

As an ardent reader of your magazine AMAZING STORIES, I think you make my contribution to "Discussions." In the December issue of your magazine I notice that a fellow reader, Mr. Kirby of New Zealand, brings up a matter of importance. Now, although I am a true and loyal Britisher in its strictest sense, my admiration goes out to Americans of the United States, partly because of their struggle along truly progressive lines and partly because in spite of the polyglot nationalities which comprises your nation, you seem welded in a bond of brotherhood. Your writers, some of whom I admire intensely, are first and foremost Americans and their knowledge is of American ideals and traditions. If they turned their imagination towards, say, the British Empire, the result would be out of focus, for every nation has its own methods and would soon distort the virile, ultra-keen American idea with the phlegmatic, exacting British mind. No Sir. American writers will not shine as Cosmopolitans, nor for that matter will any writer, and do justice to himself and his ideas. So let them carry on with their futurist and progressive ideals in their natural vein and they will please the majority of intelligent persons.

Other countries, alas, have not your type of writers to be able to inflame its citizens with their country's future greatness. Look at Britain for instance. Although I have burrowed into libraries, searched every publishers' list, I can only produce one such writer. Granted, he is one of the greatest scientifiction scribes, he is the only one I speak of. H. G. Wells, to England it is even considered mentally abnormal to read future, interplanetary or dimensional stories. So although I have been able to get in my own difficulty, I shall be able to keep in touch regularly, I hope, and enjoy my copy in spite of adverse opinions. I have only known your magazine for a year. I picked up last February's number at Woolworth's but have since been able to read the current number. Hoping some kind reader who may have a few back numbers to dispose of would communicate with me. I may have something in exchange for them if he wants, in the way of books, periodicals, etc.

So carry on with good work and let us have some stories like "Tidal Wave," and "The Green Girl," "Menace from Mars," etc. The magazine is really top hole and I haven't an adverse criticism for it except that I don't care for stories like the "Feathered Detective," "The Secret Kingdom," etc. There is no scientifiction about them.

This magazine is unique. I like "The Drums of Tapajos" being a splendid yarn.

Leo Greenhill,
5 Market Terrace,
St. Lencrock-on-sea, Sussex, England.

(An old time Democrat, the writer believes that the best governed people are the least governed, and is an upholder of States Rights, and is sometimes sorry to see the welding operation going on so industriously, as to wipe out the distinctive characteristics of the many nations represented here. There should be no trouble in getting AMAZING STORIES in England for we have several agents there in London. You must be near enough to the great city to be able to run in now and then. Your interest in the Quarterly is in line with the wants of a number of our readers and sometimes, of our own Editorial Department, and we hope that this letter will put you in touch with someone who can supply your wants. We get a good many letters from London. It is evident that our magazines circulate generally in the British Isles and we are particularly pleased when we get an appreciation from an English reader, because we always regard the Englishman as being a most severe critic. But criticism is a good thing for editors, and you will see that we publish letters of severe criticism, as well as those of appreciation. The more ones, the more glad to say, are not very frequent. We sometimes wonder whether the public realizes that the letters in our Discussions Column are not the exact transcriptions of the letters received. We can assure our readers that they are.—EDITOR.)

TELEVISION HILL CRITICIZED

Editor, AMAZING STORIES:

I have been reading AMAZING STORIES regularly for a year and on the whole I have enjoyed the stories therein. However, I would like to comment on the latest story, "Television Hill," by George McLociard. This story started very, very promising in the February issue, and continued well in the March issue up till the end and at this point, after being carried away by enthusiasm by the body of the story, I was dashed into the depths of despair by our old enemy, "the wrecked machinery." Just the old plot about the brainy scientist, his great invention, which would change the whole history of the world, and a beautiful daughter. Only the author has skillfully camouflaged and redecorated it. The answer to Mr. Gilmer's letter, you say, "Sex stuff never appears in AMAZING STORIES." Doesn't it?

W. Johnston,
506 W. 173rd St.,
New York City, N. Y.

(We agree it was too bad to have all that machinery wrecked. When you speak of an old plot, does it not seem clear that with the multitude of short stories we are pouring out of our magazines here and abroad, that the plots must practically be repeated over and over again in endlessly varying form? There is a theory or a statement that there are very few jokes and that the new ones are but rehashes of the old ones. As regards "sex stuff" never appearing in AMAZING STORIES, we applied it to the disagreeable, and certainly no disagreeable "sex" copy has ever appeared in AMAZING STORIES.—EDITOR.)

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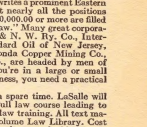

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A REQUEST FOR A SEQUEL TO "TELEVISION HILL"

Editor, AMAZING STORIES:

As the most ardent reader of "our" magazine (to my mind), I have a special request to make of its publishers. It is simply this: Please induce Mr. George McLociard into creating, as soon as possible, a sequel to his most wonderful serial, "Television Hill."

After reading the conclusion (?) of this truly remarkable story in the March number, my mind simply refused to allow me to read anything else for thinking of it. This letter gives me some relief, as there is just the remotest possibility of its bearing results.

To my mind, the story, wonderful as it was, is incomplete.

I absolutely refuse to believe that the two scientists, Cyrus King and Bob Wentworth, were killed in the airplane crash. The reports were entirely too vague and uncertain. They might easily have "faked" the crash and escaped to some remote place inaccessible by the island people's projector, and started the construction of a bigger and better machine, with which to sort of "even up" scores with their enemies.

W. R. Baker,
Box 705,
Kiefer, Okla.

(We are delighted to see that you have enjoyed "Television Hill." It certainly is a very remarkable story and the strange succession of events it and the variety of incidents have a gradual tapering off, as it were, from impending achievement, to the wreck that so often affects human efforts. We hope that Mr. McLociard will accept your hint.—EDITOR.)

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, OF AMAZING STORIES, published monthly at Jamaica, N. Y., for April 1st, 1931.

State of New York,
County of New York,
ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared T. O'Conor Sloane, who, having been duly sworn according to law, deposes and says that he is the Editor of the AMAZING STORIES and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publishers, Radio-Science Publications, Inc., 381 Fourth Avenue, New York City; Editor, T. O'Conor Sloane, 381 Fourth Avenue, New York City; Managing Editor, Miriam Bourne, 381 Fourth Avenue, New York City; Business Managers, None.

2. That the owner is: (If owned by a corporation, its name and address must be stated and addresses of stockholders owning or holding one per cent or more of total amount of stock.) Radio-Science Publications, Inc., 381 Fourth Avenue, New York City; B. A. Mackinnon, 225 Varick Street, New York City; H. W. Ply, 225 Varick Street, New York City; R. B. Asmus, 551 Fifth Avenue, New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities, are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

T. O'CONOR SLOANE.

Sworn to and subscribed before me this 27th day of March, 1931.

(Seal.) Joseph H. Kraus,
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